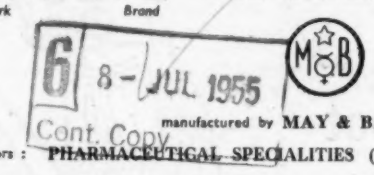
JUNE 25, 1955 PAGES 1283 TO 1336

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. XXVI OF VOL. I, 1955 LONDON, SATURDAY, JUNE 25, 1955 Pp. 120—Price 1s.
No. 6878 VOL. CCLXVIII Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper Annual Subscription: £2 2s.

'SONERYL' THE ORIGINAL BUTOBARBITONE
Trade Mark Brand



manufactured by MAY & BAKER LTD
distributors: PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM

Just published *From medical booksellers*

X-RAY ATLAS OF STOMACH
ESOPHAGUS AND DUODENUM
By T. J. J. MEUWISSEN, Eindhoven
1200 subjects from 500 cases, with brief histories and notes on technique. See review in June 4 issue.
8 × 11. 700 Pp. £8 15s.

CRIME DETECTION—SVENSSON-WENDEL
Edited by W. H. E. JAMES, Barrister-at-Law
"... no crime laboratory and few university departments of forensic medicine could fail to profit greatly by constant recourse to this short but comprehensive guide to technical police methods"—*The Lancet.*
6 × 9. 376 Pp. 154 remarkable illustrations. 38s. 6d.

TROPICAL DERMATOLOGY
Edited by Dr. R. D. G. SIMONS, Amsterdam
"It can be said straight away that they have succeeded. The work is up to date, authoritative, and well documented."
—*The Lancet.*
2 vols. 6 × 9. 1700 Pp. 1000 illustrations. £5 each.
Synopses with specimen pages from:
Cleaver-Hume Press Ltd., 31, Wright's Lane, London, W.8

DISABILITIES
AND HOW TO LIVE WITH THEM
by 55 Patients
Demy 8vo 252 pages Price 10s. 6d. net, plus 6d. postage
"This is a new sort of textbook; unlike most other textbooks it is subjective, warm and human."—Review in *Nursing Times.*
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

INTO GENERAL PRACTICE
A Guide for Beginners and Others
By J. G. THWAITES, M.B., B.S.
"... gives sound advice about the organization of a practice and the obligations of a general practitioner under the National Health Service."—*British Medical Journal.*
232 pages 12s. 6d. net
Wm. Heinemann Medical Books Ltd., Gt. Russell-street, W.C.1

8½ in. × 5½ in. 10 illustrations. £1 1s. net, postage 8d.

MENTAL HEALTH
AND HUMAN RELATIONS IN INDUSTRY
Edited by J. M. LING, M.D., M.R.C.P., Medical Director, Roffey Park Institute of Occupational Health and Social Medicine.
Foreword by LORD HORDER, G.C.V.O., M.D., F.R.C.P.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1

Third Edition
ABDOMINAL OPERATIONS
By RODNEY MAINGOT, F.R.C.S.
Surgeon, Royal Free Hospital
Completely revised. 74 Chapters (11 new). 1594 Illustrations 11 Colour Plates. 1568 Pages. Price £8 10s. net.
H. K. Lewis & Co. Ltd., 136, Gower-street, W.C.1

Sixth Edition *Now available*
PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, C.B.E., D.Sc., Ph.D., F.R.S.
Demy 8vo 314 + x 10s. 6d. net, plus 6d. postage
Revised and enlarged (containing a new chapter on Clinical Trials and 16 pages of random sampling numbers).
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

THE ANATOMY OF THE BRONCHIAL TREE
by Sir RUSSELL BROCK, *M.S., F.R.C.S., F.A.C.S.*
'Thoracic surgeons and all surgeons who are interested in the surgery of the chest will find this book their guide, philosopher and friend.'—BRITISH JOURNAL OF SURGERY.
SECOND EDITION 250 *pages* 286 *illustrations* (19 *in colour*) 45s. *net*
Selected illustrations suitable for use as a wall chart are available, price 5s. net per packet of 9 plates.
OXFORD UNIVERSITY PRESS

Two weapons against Athlete's Foot

and other fungal dermatoses

The combined use of Mycil Ointment and Powder has proved to be highly effective in both prophylaxis and treatment of fungal dermatoses.

Mycil Ointment is formulated to ensure penetration of the active constituent, chlorphenesin, to the site of the infection.

Mycil Powder, used alone, prevents reinfection. Because of its adsorptive properties it is a valuable agent with which to combat the effects of excessive perspiration.

Both preparations are non-mercurial and odourless and may be used over long periods, if necessary, without adverse effects.

'MYCIL'

TRADE MARK

MYCIL OINTMENT in collapsible metal tubes 1/6
MYCIL POWDER in sprinkler tins 1/6
Basic N.H.S. Prices

'MYCIL' Pessaries are available for treatment of trichomonal and fungal infections of the vagina. Tube of 12 3/-.

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

MYC/M/551

JUNE 25, 1955 PAGES 1283 TO 1336

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6878 LONDON: SATURDAY, JUNE 25, 1955 CCLXVIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

The Incidence of Leukæmia in Ankylosing Spondylitis Treated with X Rays — W. M. COURT BROWN, F.F.R. J. D. ABBATT, M.B. 1283

Peripheral Tuberculous Lymphadenitis Associated with a Visible Primary Focus — F. J. W. MILLER, M.R.C.P. JOAN CASHMAN, M.B. 1286

Use of Isotope-labelled Red Cells to Demonstrate Incompatibility In Vivo — P. L. MOLLISON, M.R.C.P. MARIE CUTBUSH, B.SC. 1290

Increased Excretion of Aldosterone Immediately After Operation — J. G. LLAURADO, M.D. 1295

A Positive-Negative Pressure Respirator — G. T. SMITH-CLARKE, M.I.MECH.E. J. F. GALPINE, M.R.C.P.E. ... 1299

Fatal Hypoglycæmia in Early Non-icteric Infective Hepatitis — B. E. TOMLINSON, M.R.C.P. 1300

Nutrition and Fluid and Electrolyte Balance During Treatment of Tetanus — G. WILSON, F.R.C.S. A. D. CARE, PH.D. 1303

Leiomyosarcoma of the Stomach — J. F. HORLEY, M.B. 1305

Leiomyoma of the Stomach — H. R. KER, F.R.C.S. 1306

MEDICAL SOCIETIES

British Orthopædic Association and Société Française d'Orthopédie et de Traumatologie .. 1307

NEW INVENTIONS

Aspiration Trocar and Cannula — KENNETH ROBSON, F.R.C.P. 1309

Modified Magill's Attachment to Boyle's Apparatus — JOHN BULLOUGH, F.F.A.R.C.S. 1309

LEADING ARTICLES

HEROIN 1311

COBALT AND ANÆMIA 1312

ANNOTATIONS

Cancer of the Larynx 1313

Hypophysectomy in Diabetes .. 1314

Angiocardiography in Chest Disease 1315

Delivery by Suction 1315

A New Enteric Organism 1315

Immediate Dentures 1316

Reconstruction of Hand Digits .. 1316

SPECIAL ARTICLES

Disposal of the Chronic Case — J. R. D. BAYNE, M.D. MARJORY WARREN, M.R.C.S. 1317

Treatment Centre for Alcoholics in a Mental Hospital — M. M. GLATT, M.D. 1318

A Centre for Cerebral-palsied Children 1320

Regional Hospital Boards and Boards of Governors of Teaching Hospitals 1321

Birthday Honours 1321

New Maternity Hospital in Cardiff 1321

THE WIDDICOMBE FILE

XXVI. The Hour of the Angel 1322

LETTERS TO THE EDITOR

Quarantine Measures in Poliomyelitis (Dr. Margaret Agerholm) 1327

Complications of Chlorpromazine Therapy (Dr. I. A. Samad) .. 1327

Children in Hospital (Dr. Janet Hazell) 1327

Cancer Research (Dr. Th. Olbert) 1328

Hypersensitivity Angiitis (Dr. J. R. Edge, Dr. S. Fazlullah, Dr. J. Ward) 1328

Mental Retardation (Dr. W. P. Cargill) 1328

Digital Arteries in Raynaud's Disease (Dr. A. J. Barnett) .. 1328

Effect of Hydergine on Uterine Action (Dr. M. Beddow Bayly; Prof. T. N. A. Jeffcoate, F.R.C.O.G., Dr. J. K. Wilson) .. 1329

A Barbiturate Antagonist (Dr. J. T. Wright) 1329

Teaching Deaf Children (Mr. E. N. Owen, F.R.C.S.) 1330

Food in Mental Hospitals (Dr. Z. A. Leitner) 1330

Artificial Respiration by Intermittent Positive Pressure (Prof. E. A. Pask, F.F.A.R.C.S.) 1330

Periodic Syndrome (Dr. H. R. E. Wallis) 1331

Treatment of Chronic Amœbic Dysentery (Dr. Roger Lane) .. 1331

Heroin (Sir John Conybeare, F.R.C.P.) 1331

Sterilisation of Blankets (Dr. Frank Marsh) 1331

Anti-histamines as Hypnotics (Mr. R. E. Holmes, M.P.S.) ... 1331

By Any Other Name (Dr. Gordon Ward) 1332

Sweets and Dental Caries (Dr. G. Fielding) 1332

Dangerous Cots (Mr. E. G. Herzog, B.S; Mr. Harold Kisch, F.R.C.S.) 1332

REVIEWS

Notices of Books 1310

PUBLIC HEALTH

Uses of Radioactive Waste 1323

Poliomyelitis in Barnsley 1323

PARLIAMENT

Future of the Social Services ... 1324

Question Time 1325

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents .. 1326

OBITUARY

Donald Breadalbane Blacklock 1332

Redcliffe Nathan Salaman 1333

Charles Eric Rhodes 1334

Dr. R. A. Lyster 1334

NOTES AND NEWS

Obstetric Medicine Research Unit at Aberdeen 1335

Diary of the Week 1336

Appointments 1336

FOR TRIGEMINAL NEURALGIA

'DISTIVIT' B12

brand

Injection of vitamin B_{12} B.P.

1,000 micrograms

Distributed by

BURROUGHS WELLCOME & CO.

EVANS MEDICAL SUPPLIES LTD

IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD.

Manufactured by THE DISTILLERS COMPANY (*Biochemicals*) LTD. Devonshire House, Piccadilly, London, W.1

'Distivit,' a trademark, is the property of the manufacturers 43/54

KAYLENE-OL

(brand of colloidal kaolin B.P. and liquid paraffin)

in the treatment of Intestinal Toxæmia, Chronic Colitis and Spastic Constipation

All the products of Kaylene (Chemicals) Limited are in Category 2 or Category 4 in the Ministry of Health's Classified List, and are therefore prescribable on Form E.C.10.

Samples and literature on request.

KAYLENE (CHEMICALS) LIMITED

WATERLOO ROAD, LONDON, N.W.2

In many restricted diets there is a tendency for certain essential nutrients to be deficient. Such shortages may arise with patients who are on special diets, for example, in cases of obesity, gastric troubles or diabetes, and also with old people living alone.

RESTRICTED DIETS

Among the essential nutrients which may be deficient in these circumstances are the vitamins of the B complex. In order to increase the vitamin B complex content of the diet and thus counteract this type of deficiency, Marmite is often recommended. Marmite is a concentrated yeast extract, which provides riboflavin and nicotinic acid, and also folic acid, pantothenic acid, pyridoxin, biotin, choline, inositol and p-aminobenzoic acid.

Literature on request

MARMITE

yeast extract

Jars: 1-oz. 9d., 2-oz. 1/4, 4-oz. 2/4, 8-oz. 4/-, 16-oz. 7/-.

Obtainable from chemists and grocers

Special terms for packs for hospitals, welfare centres and schools

THE MARMITE FOOD EXTRACT CO., LTD.
35, Seething Lane, London, E.C.3

506/54

Just published by The Year Book Publishers Inc., Chicago:

THE LUNG

CLINICAL PHYSIOLOGY and PULMONARY FUNCTION TESTS

By JULIUS H. COMROE, Jr., M.D. and Collaborators

CONTENTS: Introduction. Lung Volumes. Pulmonary Ventilation. The Pulmonary Circulation and Ventilation/Blood Flow Ratios. Diffusion. Arterial Oxygen, Carbon Dioxide and pH. Mechanics of Breathing. Clinical Applications of Pulmonary Function Tests. Useful Data, Equations and Calculations.

1955 6×9 227 pages, 57 figs. **40s.**

Distributed in the United Kingdom by
INTERSCIENCE PUBLISHERS, LTD.
88-90 Chancery Lane, London, W.C.2

Just published by
Springer Publishing Co. Inc., New York :

DRUGS IN CURRENT USE 1955

Edited by WALTER MODELL, M.D.

Associate Professor, Clinical Pharmacology, Cornell University Medical College

On-the-spot information on drugs as you need it in private and hospital practice.

A thousand drugs are presented in A B C order under proprietary and official names, with all this : Principal pharmacologic characteristics ; physical properties, absorption ; major uses ; therapeutic and toxic actions ; warnings ; mode of administration ; preparations in common use ; dosage ; available antidotes. In addition there are essays on pharmacologic groups, with lists of drugs ; also therapeutic groups, with lists. The metric system is used, with conversion tables included for apothecary measures.

159 pages, flexible binding (1955) **15s.**

Distributed throughout the British Empire (except Canada) by

INTERSCIENCE PUBLISHERS, LTD.

88-90 Chancery Lane, London, W.C.2

NEW BOOKS AND EDITIONS

HYPNOTIC SUGGESTION
Its Role in Psychoneurotic and Psychosomatic Disorders

By **S. J. VAN PELT**

7¼ × 4¾ *in.* 94 *pp.* **8s. 6d.,** *post* **3d.**

The author believes an entirely new approach is required, not only to the psychoneuroses and associated psychosomatic disorders, but also to hypnotic suggestion and the role it plays in the ætiology and treatment of these conditions.

BACKACHE IN WOMEN

By **E. SCHLEYER-SAUNDERS**

8½ × 5½ *in.* 80 *pp.* 6 *illustrations.* **7s. 6d.,** *post* **3d.**

This book is the result of the author's years of experience in the examination of several thousands of women suffering from backache, and many new facts are presented.

NOTES ON MENTAL DEFICIENCY

Compiled by **J. F. LYON** and **W. A. HEATON-WARD**

Third Edn. 8½ × 5½ *in.* 52 *pp.* **3s. 6d.,** *post* **3d.**

This booklet presents in a concise and practical form a general picture of the problem of mental deficiency. It will be invaluable to medical students, general practitioners, nurses, social workers, and magistrates.

REMEDIAL EXERCISES FOR POSTURAL DEFECTS
For use in the Home and School

Compiled by **L. S. ROLLESTON**

Revised by **T. PRICE**

New Edn. 8½ × 5½ *in.* 16 *pp.* *Illustrated.* **2s. 6d.,** *post* **3d.**

The exercises are used in the children's orthopædic clinics in Wiltshire and Somerset affiliated to the Bath and Wessex Orthopædic Hospital. It is felt that there is a need for a simple illustrated guide to the exercises for use in the school and the home and that this booklet should achieve a wide circulation.

JOHN WRIGHT & SONS LTD., BRISTOL

Now Ready

MODERN TRENDS *in* BLOOD DISEASES

Edited by JOHN F. WILKINSON, M.D., M.Sc., Ph.D., F.R.C.P., F.R.I.C.

Consultant Physician, United Manchester Hospitals ; Director, Department of Haematology, Manchester Royal Infirmary, Reader in Haematology and Lecturer in Medicine, University of Manchester

Throughout this new work, attention has been concentrated on those fields of research in which there has been outstanding progress in the knowledge of blood diseases and their aetiology, in earlier and more accurate diagnosis and in more effective treatments. Emphasis is laid on the importance of closer co-operation between haematologist and specialist in the spheres of diagnosis and treatment, particularly in the many cases of diseases of the blood and blood-forming organs which may often, in the early stages, simulate diseases of other systems. The book is the joint work of a number of clinicians and scientists distinguished both in this country and in the United States for their clinical and research work in haematology. It covers such a wide range that it must be of immense practical value not only to the haematologist and the general physician, but to those interested in the many conditions of bone, eye, skin or other regions so often caused by diseases of the blood.

Pp. vi + 341 + *Index.* 92 *illustrations,* 2 *colour plates*

Price **65s.** *net*

BUTTERWORTHS · 88 KINGSWAY · LONDON · W.C.2

Showroom : 11-12 Bell Yard, Temple Bar, W.C.2

A man with a lot on
his mind must be calm yet alert

For patients who are anxious, tense, restless . . . yet have to cope with the weightier problems of the day . . . Seconesin provides a safe relaxant-sedative. Non-narcotic and with a minimum of secobarbital, there is no danger of cumulation or "hangover" because both components are rapidly eliminated. Seconesin acts promptly and its effect lasts only a few hours. Day-time relaxation with Seconesin is so calming that most patients sleep well at night without further hypnotics, or sedatives.

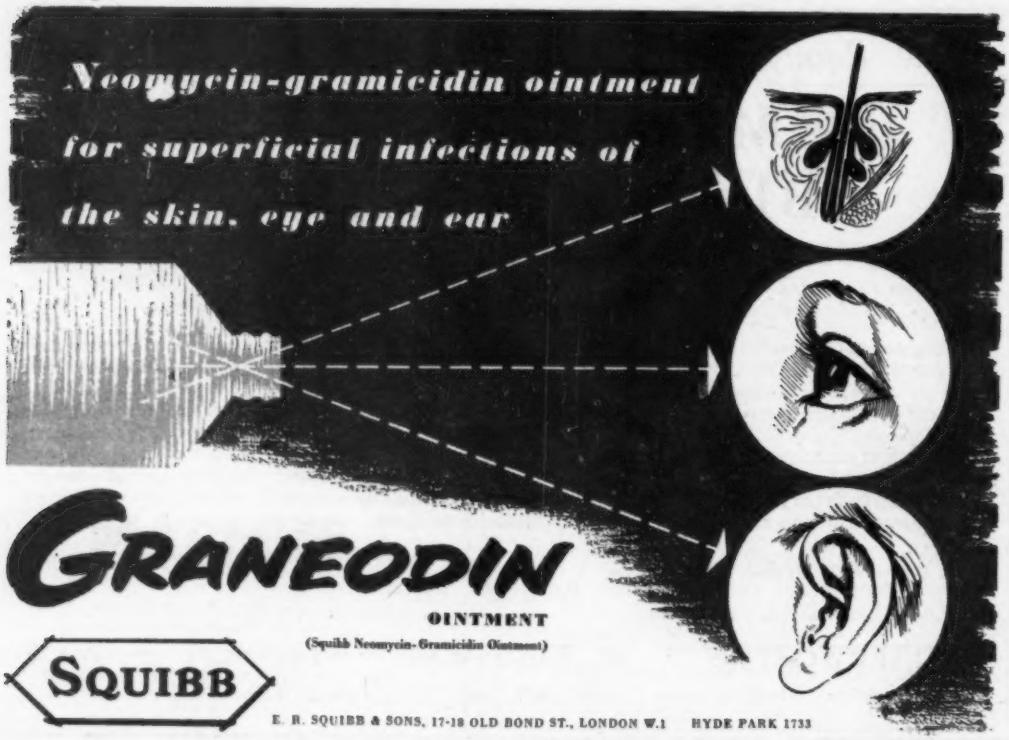
Each tablet contains:— *Mephenesin 400 mg.*
Secobarbital 30 mg.

SECONESIN

Packings of 25, 100 and 500 tablets *Full literature on request*
Basic N.H.S. cost—3/4d. per bottle of 25 tablets

THE CROOKES LABORATORIES LIMITED · PARK ROYAL · LONDON N.W.10

Neomycin-gramicidin ointment
for superficial infections of
the skin, eye and ear



GRANEODIN
OINTMENT
(Squibb Neomycin-Gramicidin Ointment)

SQUIBB

E. R. SQUIBB & SONS, 17-18 OLD BOND ST., LONDON W.1 HYDE PARK 1733

Alpha tocopherol (Vitamin E) for CARDIOVASCULAR-RENAL DISEASES

The natural vitamin E available only since 1948 must not be confused with the wheat germ oil in use before that date with its limitations as to potency and stability.

The natural vitamin E of today comprises a concentrate distilled from the oils of cottonseed, palm, soya bean, etc.

The standard laid down by the League of Nations is that 1 international unit = 1 mgm. of d.l. *alpha* tocopheryl acetate.

The VITA-E Gelucap (75 i.u.) heads the list of brands approved by the Vitamin E Society and is that recommended by the Shute Foundation for Medical Research and used with such conspicuous success at the Shute Institute.

LITERATURE ON REQUEST

Sole Manufacturers:

THE BIOGLAN LABORATORIES LTD.
HERTFORD, HERTS, ENGLAND.

Specialists in Hormones and Vitamins

EPHAZONE tablets

Rational, symptomatic treatment in
ASTHMA AND BRONCHITIS

Each tablet contains Ephedrine, the important anti-spasmodic for bronchial spasm, Theobromine, for its relaxing effect on the bronchial muscle and for stimulation of the coronary circulation, Phenazone, for its soothing effect on the higher centres, and Calcium gluconate, a readily absorbable calcium salt, for diminishing capillary permeability and checking the secretion of mucus.

These active ingredients with complementary effects in bronchial asthma are presented in the following proportions in the 'EPHAZONE' Tablet:

Ephedrine hydrochloride	**¼ grain**
Theobromine	**½ grain**
Phenazone	**1 grain**
Calcium gluconate	**½ grain**

This preparation is sanctioned for prescription under N.H.S.

Please write for sample and descriptive leaflet

EPHAZONE LTD
59 BROOK ST., LONDON, W.1
TEL: MAYFAIR 5496

SLEEP

WITHOUT AFTER - EFFECTS

ETHOBRAL is the *new* Triple Barbiturate combination whose selective elimination reduces unwanted after-effects to the inconsequential minimum. Your patient will sleep *rapidly* and *soundly* for *7 - 8 hours*, awaking refreshed in body and incisive in mind.

'Ethobral'

TRIPLE BARBITURATE TABLETS

Ethobral Triple Barbiturate Tablets are available in containers of 20, each tablet containing Quinalbarbitone 50 mg., Butobarbitone 30 mg., and Phenobarbitone 50 mg.

Wyeth

'Ethobral' is the registered trade mark of

JOHN WYETH AND BROTHER LIMITED, CLIFTON HOUSE, EUSTON ROAD, LONDON, N.W. 1

A

AVAILABLE TO HOSPITALS ONLY

Tryptar

PURIFIED CRYSTALLINE TRYPSIN

For Physiologic Debridement of Necrotic Tissue, Intrapleural Use.

Tryptar Aerosol

For Bronchial Asthma
Acute and Chronic Bronchitis
Bronchiectasis and Atelectasis

WRITE FOR LITERATURE TO

Telephone : HAMPDEN PARK 740

Telegrams : ARMOLAB EASTBOURNE

THE ARMOUR LABORATORIES
(ARMOUR & COMPANY LTD.)

HAMPDEN PARK, EASTBOURNE, SUSSEX

LIL-LETS

the new vaginal tampon without applicator

A tampon which has been successfully marketed on the Continent during the last five years has now become widely accepted in this country under the name LIL-LETS.

Following extensive clinical trials, LIL-LETS have won the support of leading gynæcological opinion. Samples will be sent to medical practitioners on request.

LIL-LETS have these main advantages:

LIL-LETS need no applicator. By inserting the tampon with the fingers, the risk of bruising is eliminated.

LIL-LETS assist personal hygiene. At 1/6 for 10 they are so much cheaper than other leading tampons that women will be encouraged to change them often. They are easily carried about and easily disposed of.

LIL-LETS are highly absorbent. They absorb almost ten times their own weight in moisture and swell sideways, not lengthways. They are, therefore, really safe.

LIL-LETS are individually wrapped. Each tampon is sealed in a transparent cover. There is no risk of soiling or infection when it is carried loose.

LIL-LETS
o.b.

S&N SMITH & NEPHEW LTD · WELWYN GARDEN CITY · HERTS

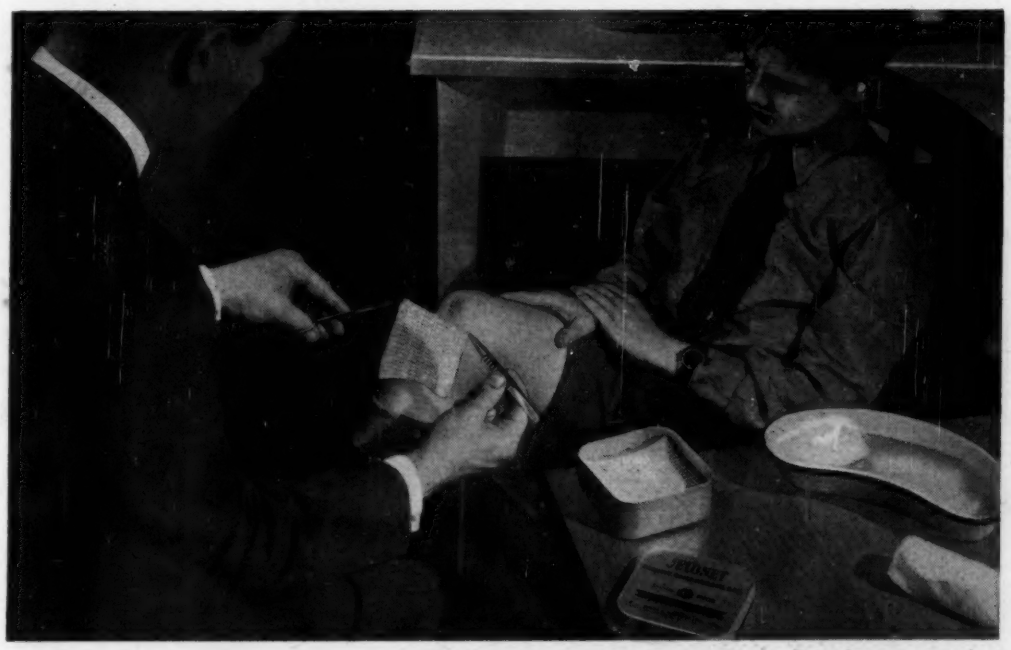
Simple, effective contraception

where secondary occlusive methods are unacceptable or impracticable

Preceptin™ VAGINAL GEL

Ortho

Ortho Pharmaceutical Limited · High Wycombe · England



Is it going to hurt?

There are many wounds of all types which require dressing in such a way that the delicate epithelium receives the minimum of trauma. Most burns and many of the lesser accidents to which children are subject come into this category.

In such cases, consider the advantages of Jelonet paraffin gauze dressing. This non-adherent dressing, a Smith & Nephew product, comes to you sterilized for immediate use in your surgery. It need exert no more pressure over the damaged part than is absolutely necessary; dressing trauma is prevented, and healing can continue undisturbed.

Jelonet dressings are supplied in tins and in separately-packed single pieces, in sealed envelopes, for use in the patient's home.

JELONET

TRADE MARK

PARAFFIN GAUZE DRESSING B.P.C

is a dressing for all wounds — sterile and ready for immediate use

Jelonet may be prescribed on Form E.C.10 in the following sizes: — individual pieces in separate envelopes, in cartons of 12, and in tins containing 5, 10 and 36 pieces. Each piece 3¼″ x 3¼″.
For hospitals and other large users there is a special tin containing a strip 8 yds. long x 3¼″ wide zig-zag folded. Every dressing is sterilised and ready for immediate use.

FULL DETAILS FROM SMITH & NEPHEW LTD · WELWYN GARDEN CITY

S&N

The night passes serenely to a fresh awakening...

Since the original synthesis of 'Amytal' over thirty years ago, continued research by Eli Lilly & Company has resulted in a wide and selective range of Barbiturates.

'Pulvules'
'SECONAL SODIUM'
brand Quinalbarbitone Sodium.
Quick onset — short duration.
¾ gr. and 1½ grs.

'Pulvules'
'SODIUM AMYTAL'
brand Sodium Amylobarbitone.
Medium onset and duration.
1 gr. and 3 grs.

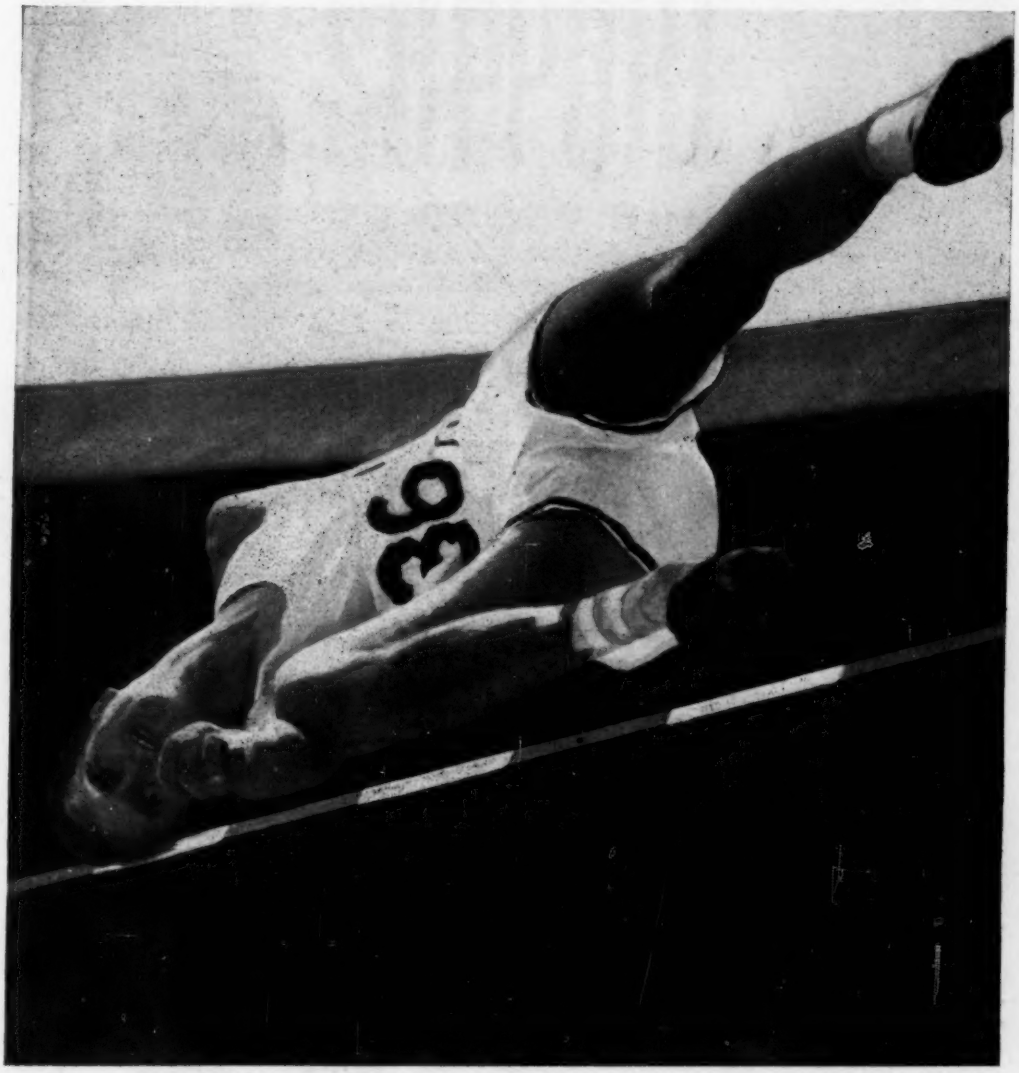
Lilly
TRADE MARK

Barbiturates

'Pulvules'
'TUINAL'
brand Quinalbarbitone Sodium with Sodium Amylobarbitone.
Quick onset — medium duration.
1½ grs. and 3 grs.

Tablets
'AMYTAL'
brand Amylobarbitone.
Medium onset — moderately long duration.
⅛ gr., ¼ gr., ½ gr., ¾ gr. and 1½ grs.

ELI LILLY & COMPANY LIMITED, BASINGSTOKE, ENGLAND



highest utilisation

The therapeutic value of any preparation is in direct ratio to the amount absorbed and utilised. That FERROMYN is an improved form of iron medication was confirmed by achieving a utilisation factor of 40 per cent ±5. This figure was considerably higher than any obtained from contemporary oral iron preparations. The clinical response is in keeping with the above factor, realising a mean daily Hb. response of 1.2 per cent in 150 cases reviewed during a recent clinical trial.

FERROMYN is supplied in four forms:

FERROMYN TABLETS Each tablet contains *Ferrous Succinate 150 mgm.*

ELIXIR FERROMYN Each teaspoonful contains *Ferrous Succinate 150 mgm.*

FERROMYN 'B' TABLETS Each tablet contains: *Ferrous Succinate 150 mgm. Aneurine Hydrochloride 1 mgm. Riboflavin 1 mgm. Nicotinamide 10 mgm.*

ELIXIR FERROMYN 'B' Each teaspoonful contains: *Ferrous Succinate 150 mgm. Aneurine Hydrochloride 1 mgm. Riboflavin 1 mgm. Nicotinamide 10 mgm.*

CALMIC LIMITED, CREWE. Phone CREWE 3251-5 **LONDON: 2 MANSFIELD ST, W1** Phone LANgham 8038-9

FERROMYN TABLETS

ELIXIR FERROMYN

FERROMYN 'B' TABLETS

ELIXIR FERROMYN 'B'

FERROMYN

... leadership in oral-iron therapy

11

To fight infection

to fortify body defences

*Tetracyn SF

BRAND OF TETRACYCLINE WITH VITAMINS

*Terramycin SF

BRAND OF OXYTETRACYCLINE WITH VITAMINS

TERRAMYCIN S.F. and TETRACYN S.F. capsules provide, in addition to the average daily adult dose of each antibiotic (I.O.G.), the specific therapeutic dosage of water soluble vitamins as well as vitamin K:

ASCORBIC ACID 300 mg.
THIAMINE MONONITRATE 10 mg.
RIBOFLAVIN 10 mg. · NICOTINAMIDE 100 mg.
MENAPHTHONE (*vitamin K analogue*) 2 mg.

By administering the essential anti-stress vitamin supplement combined with Terramycin or Tetracyn in a single capsule, the physician is assured that the patient's vitamin requirements have been met in an important respect.

Pfizer **WORLD'S LARGEST PRODUCER OF ANTIBIOTICS**

PFIZER LTD · FOLKESTONE · KENT · TEL: FOLKESTONE 51771 * *Registered Trade Marks*

SUPPORT
at every age

Every stage of life calls for the support that comes from an adequate intake of vitamins and other essential factors. Lederle vitamin products ably meet such supportive needs.

A rational measure against the strains and stresses due to inadequate intake of the B complex is Lederplex, which provides the entire B complex from liver, with other nutritional factors.

LEDERPLEX*

Brand of Vitamin B complex

Capsule: bottles of 100 and 500
Tablets: bottles of 100 and 1,000
Liquids: bottles of 4, 8 and 12 fl. oz.

Prenatal Capsules provide vitamins, bone-forming minerals and haematinic factors for the nutritional needs of mother and child during pregnancy and lactation.

PRENATAL CAPSULES

Bottles of 100 and 1,000

Patients who feel "Not too well these days" often benefit from Vi-Magna Capsules. In such cases, one capsule daily does much to improve appetite, endurance and general well-being.

VI-MAGNA* CAPSULES

Brand of Multivitamins
Bottles of 100 and 1,000

Gevral containing 13 vitamins and 12 minerals, is designed to maintain well-being and to promote resistance to infection in those past middle age.

GEVRAL* CAPSULES

Brand of Geriatric Vitamin Mineral Supplement

Bottles of 30

---

*Regd. Trade Mark

LEDERLE LABORATORIES DIVISION
Cyanamid Products Ltd.
BUSH HOUSE, ALDWYCH, LONDON, W.C.2. TEMPLE BAR 5411

Lederle

PEACE AFTER PAIN . . . The acute distress of babies — not to mention their parents — resulting from infantile colic is effectively relieved by 'Merbentyl' Syrup. 'Merbentyl'* is an anticholinergic and smooth muscle relaxant with striking freedom from side-effects. In Syrup form — pleasant-tasting and acceptable — it is ideal for paediatric use in functional disorders of the gastro-intestinal tract.

* *Diethylaminocarbethoxybicyclohexyl hydrochloride.*

Merrell research

MERBENTYL SYRUP
contains 10 mg. 'Merbentyl' per 5 c.c.
'Merbentyl' is also presented in Tablet form (10 mg.)
Both tablets and syrup are available combined with Phenobarbitone (15 mg.)

MERBENTYL REGD.
SYRUP

distributed in the United Kingdom and Eire by
RIKER LABORATORIES LIMITED, LOUGHBOROUGH, LEICS.
for the Wm. S. Merrell Company, London.

PREVENTION of MOTION SICKNESS
Number Three

One Remedy

for all Modes of Travel

The effectiveness of hyoscine hydrobromide in the prevention of motion sickness was first demonstrated against sea-sickness. This was during the war, when tablets of hyoscine were issued to sea-borne assault forces. After the war this practical success was confirmed in a trial[1] on short sea journeys, when hyoscine was found to be more successful than either diphenhydramine or promethazine.

Hyoscine was also found to give equally good results in the prevention of air-sickness, and tests[2] on American airmen showed that 99.5% of the subjects given hyoscine were completely protected.

It has not been possible to conduct similar tests in respect to car, bus and train sickness, but the very large empirical experience gained through the sale of hyoscine as Kwells seems to show that there must be a high degree of effectiveness against those forms of motion sickness.

Tablets of hyoscine hydrobromide are available as Kwells through every retail chemist in the country. They are advertised to the public, and sold at a price of 1/6 for ten tablets, packed in an unbreakable vial. A professional sample may be obtained upon request to the manufacturers, E. Griffiths Hughes Ltd., P.O. Box 407, Manchester.

K

[1] *Lancet, 1951. ii., 749*
[2] *Jnl. Aviation Med., 16 : 59, 1945*

Transvasin

brings the esters of NICOTINIC ACID SALICYLIC ACID p-AMINOBENZOIC ACID to the focal point of soft-tissue rheumatism

The esters in Transvasin, a new preparation developed by Hamol S.A., our Swiss associates, readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on delicate skins. It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

Transvasin is available in 1 oz. tubes, basic price 2/6 plus 7½d. P.T., and is not advertised to the public. Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 WATERLOO PLACE, LONDON, S.W.1. WHITEHALL 8654/5/6

Transvasin is the registered trade mark of Lloyd-Hamol Ltd.

EASILY ASSIMILATED IRON

For hypochromic anaemia in all ages and conditions, particularly in pregnancy, childhood, adolescence and advancing age, Ferraplex B provides easily assimilated iron supplemented, for maximum haematinic effect, with copper, vitamin C and complete vitamin B complex. Side effects such as gastro-intestinal disturbances are rare.

Available in bottles of 50 and 250 tablets.
Basic N.H.S. cost of 250 tablets, 15/6d.
Average daily cost of treatment, 4½d.

The recommended daily dose of six FERRAPLEX B *tablets contains:—*

Ferrous sulphate exsicc., B.P.	1 gramme
Copper carbonate	2 mg.
Ascorbic acid (Vitamin C)	50 mg.
Natural vitamin B complex extract	2 grammes
prepared from Brewers' Yeast and including	
Aneurine hydrochloride	3 mg.
Riboflavine	6 mg.
Nicotinamide	30 mg.

and pantothenic acid, pyridoxine, folic acid, choline, inositol, biotin, para-aminobenzoic acid and other naturally occurring factors of the vitamin B complex.

FERRAPLEX B

BENCARD

C. L. BENCARD LTD.
PARK ROYAL · LONDON · N.W.10
Telephone: ELGar 6681.
Telegrams: Bencarlond, Harles, London.

There is no other Rauwolfia product like...

RAUWILOID

Brand alkaloid hydrochlorides of Rauwolfia Serpentina

Outstanding in the treatment of mild hypertension

Because... Rauwiloid is free from the inert matter in the crude root and its undesirable substances (for instance yohimbine type alkaloids).

Because... Rauwiloid contains, besides reserpine, a number of active hypotensive alkaloids, for example rescinnamine * (recently isolated by Riker Research) and reported more hypotensive and less sedative than reserpine.

Because... Rauwiloid (constant in potency and action), is fractionated only from carefully identified, unadulterated Rauwolfia serpentina, Benth.

* *Pharmacological Studies with Rescinnamine, a New Alkaloid Isolated from Rauwolfia serpentina, Proc. Soc. Exper. Biol. and Med.*, 1954, 86, 120.

Dosage is Simple...

TWO TABLETS NIGHTLY

RIKER

Detailed literature on request

RIKER LABORATORIES LTD

LOUGHBOROUGH, LEICS.

Registered users of the trade mark 'RAUWILOID'

NEW CORTISONE DERIVATIVE

DECORTISYL

Δ_1 — dehydrocortisone *

ROUSSEL

ROUSSEL LABORATORIES

manufacturers of CORTISYL and HydroCORTISYL have pleasure in introducing the new cortisone derivative — DECORTISYL.

It is characterised by maximal anti-inflammatory and anti-rheumatic effect, and minimal sodium retention.

***DECORTISYL** is presented in 5 mg. tablets.*

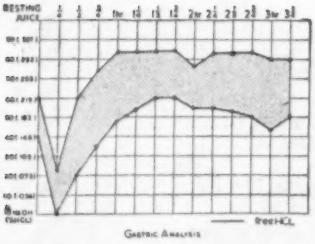
An announcement regarding distribution of this product will be made shortly on completion of discussion with the authorities concerned, but initial quantities are at the disposal of research centres.

* Also known as metacortandracin.

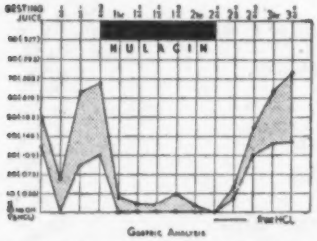
ROUSSEL LABORATORIES LIMITED 847, Harrow Road, London, N.W.10.

Nulacin

for milk-alkali drip therapy without inconvenience



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.

The use of milk-alkali drip therapy in establishing and maintaining a state of gastric anacidity has for many years been accepted as a standard practice in the treatment of peptic ulcers.

Such a continuous antacid effect could only be achieved by administering the drip through a tube, with its attendant inconvenience and discomfort to the patient. NULACIN tablets, held in the buccal cavity, give continuous neutralization without inconvenience or discomfort.

INDICATIONS

NULACIN tablets are indicated whenever neutralization of the gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

Beginning half-an-hour after food, a NULACIN tablet should be placed in the mouth and allowed to dissolve slowly. During the stage of ulcer activity, up to three tablets an hour may be required. For follow-up treatment, the suggested dosage is one or two tablets between meals.

NULACIN tablets are not advertised to the public and have no B.P. equivalent. May be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Price to pharmacists is 2/-.) Also available in tubes of 12.

NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate Magnesium Trisilicate 3.5 grs.; Magnesium Oxide 2.0 grs.; Calcium Carbonate 2.0 grs.; Magnesium Carbonate 0.5 grs.; Ol. Menth. Pip. q.s.

BIBLIOGRAPHY:

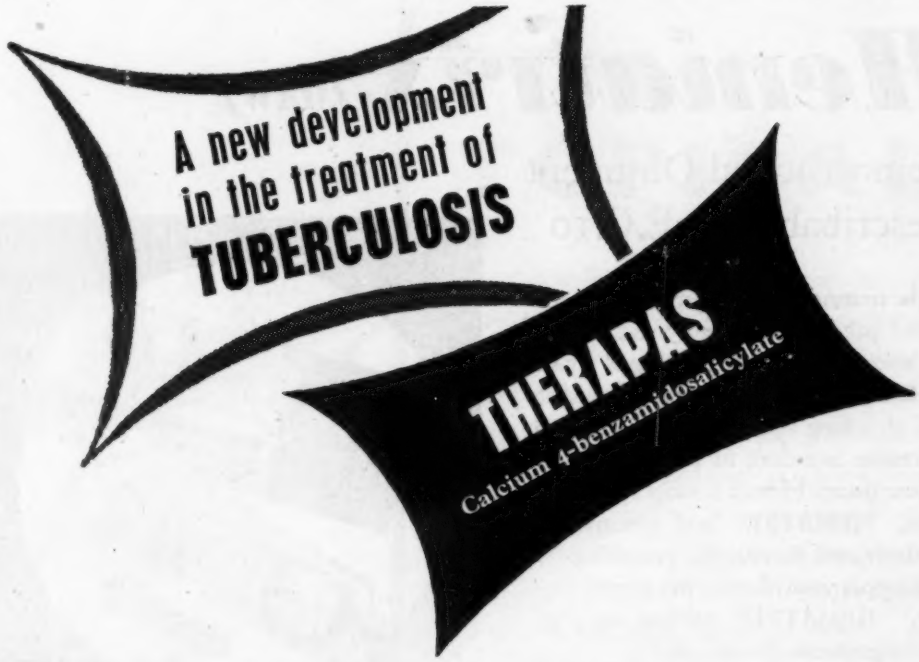
The Control of Gastric Acidity. *Brit. Med. J.*, 26th July 1952, 180-182
Medical Treatment of Peptic Ulcer. *Med. Press*, 27th February 1952, 195-199
The Effect on Gastric Acidity of "Nulacin" Tablets. *Med. J. Aust.*, 28th November 1953, 823-824
Control of Gastric Acidity by a New Way of Antacid Administration. *J. Lab. Clin. Med.*, 1953, **42**:955.
Further Studies on the Reduction of Gastric Acidity. *Brit. Med. J.*, 23rd January 1954, 183-184
Clinical Investigation into the Action of Antacids. *The Practitioner*, July 1954, **173**:46

NULACIN

is available throughout the British Commonwealth, in the U.S.A., and many other countries. It is known as Nulactin in Canada and Sweden.

HORLICKS LIMITED

PHARMACEUTICAL DIVISION · SLOUGH · BUCKS



THERAPAS first synthesized in our laboratories in 1951, was introduced into tuberculosis therapy as an alternative to P.A.S. Detailed pharmacological studies have been published in this country (1), and Swiss workers have produced evidence (2) that calcium 4-benzamidosalicylate has a therapeutic action *per se*.

Therapas delays the emergence of streptomycin resistance. Its value in the treatment of genito-urinary tuberculosis is well established (3), (4), (5). Unlike P.A.S. (to which it is converted in the body) it has a slightly sweet, not unpleasant taste.

Effective though **Therapas** has been in these respects, it now appears from recent work (6), shortly to be published, that it is of still greater importance. The results indicate that:

Therapas, in combination with isoniazid or streptomycin, gives satisfactory clinical and radiological results in the treatment of pulmonary tuberculosis.

Therapas is just as effective as P.A.S. in delaying the emergence of resistance to either isoniazid or streptomycin.

Therapas can be used wherever P.A.S. is indicated, and is better tolerated.

Dosage: **Therapas** may be administered in daily doses of 14 G.
Availability: Individual packets of 3.5 G. in boxes of 100 packets.
1·0 G cachets in containers of 100 and 500.
Bulk powder in containers of 100 G and 500 G.

(1) *J. Pharmacy & Pharmacol.*, 1953, **5**, 849.

(2) *Schweiz. Med. Wschr.*, 1955, **85**, 222.

(3) *Brit. Med. J.*, 1953, **1**, 95.

(4) *Brit. Med. J.*, 1953, **1**, 901.

(5) *Lancet*, 1955, **1**, 116.

(6) *In press.*

Further information and prices from
Smith & Nephew Ltd.
Welwyn Garden City, Herts.

S&N

Hematrix (MAW)

Hæmorrhoidal Ointment
Prescribable on E.C.10

For the treatment of haemorrhoids, pruritus ani and painful inflammatory and eczematous lesions of the skin in the anal region. HEMATRIX is designed for the immediate relief of itching and localised pain through progressive treatment of the enlarged and varicose tissues by mild antacid astringent action. HEMATRIX acts promptly, effectively and thoroughly, promoting the disappearance of subjective symptoms. HEMATRIX contains as active ingredients: Benzocaine 6%. Alum. Oxide 7.5%, Zinc Oxide 5%. Bals. Peruv. 2.5%, in a suitable emollient vehicle. Presented in tubes complete with extension introducer for internal application.

Maw's Ethical Products also include

NAPHTHIONIN A haemostatic of general action for administration by the parenteral route; used pre-operatively or post-operatively.
Naphthionin does not control hæmophiliac bleeding for which Thrombin (MAW) is the hæmostatic of choice.

THROMBIN (MAW) A haemostatic for topical use in surgical procedures for the immediate arrest of haemorrhage.

THROMBOPLASTIN (MAW) For reagent use in the determination of the prothrombin time in anticoagulant therapy.

REAZIDE (Cyanacetic Acid Hydrazide) A new hydrazide for specific use in all forms of tuberculosis, particularly in chronic cases. Clinical trials in progress.

Further information available on request from Department L

Maw's

ETHICAL PRODUCTS

S Maw Son and Sons Limited · Barnet · England

IT'S TOPICAL

The topical use of ACHROMYCIN tetracycline is rapidly gaining favour in present-day treatments of skin and eye infections. Because of its unsurpassed broad antibacterial range and remarkable freedom from sensitizing effects, ACHROMYCIN Ointment (3%) ably and safely combats a wide variety of skin infections. Rapidly active, it can be employed to arrest infection . . . to protect skin surfaces in contact with infected tissue fluids . . . to treat infected abrasions and burns . . . as a prophylactic measure after surgical incision or minor excision. The striking versatility of ACHROMYCIN plus its unusual freedom from side-effects make the Ophthalmic Ointment (1%) a particularly reliable means of controlling ocular infections. It is particularly useful for combating infections of the conjunctiva and deeper structures of the eye; and for preventing infection in traumatic and operative injury to the eye. Many mild conditions respond in as little as 48 hours.

ACHROMYCIN*

TETRACYCLINE

Achromycin Ointment (3%)
30 mg./Gm. tetracycline HCl in a petrolatum wool fat base.
Tubes of ½ oz. and 1 oz.

Achromycin Ointment (Ophthalmic) 1%
10 mg./Gm. tetracycline HCl in a petrolatum wool fat base.
Tubes of ½ oz. in boxes of 6.

Available also as: CAPSULES · INTRAMUSCULAR · INTRAVENOUS · ORAL SUSPENSION PEDIATRIC DROPS · SOLUBLE TABLETS · SPERSOIDS † Dispersible Powder · TABLETS

† Trade Mark * Regd. Trade Mark

LEDERLE LABORATORIES DIVISION

Lederle *Cyanamid Products Ltd.* Bush House · London, W.C.2 · Temple Bar 5411

INTRAMUSCULAR IRON

Widespread Acceptance...

"The Iron given parenterally was absorbed from the intramuscular site and utilised."[1]

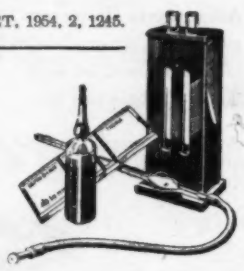
"Utilisation for haemoglobin production was extremely good."[2]

"In every patient a satisfactory rise in the haemoglobin took place."[3]

"... all the patients in the series developed a vigorous sense of well-being which contrasted very strikingly with their previous chronic ill-health."[3]

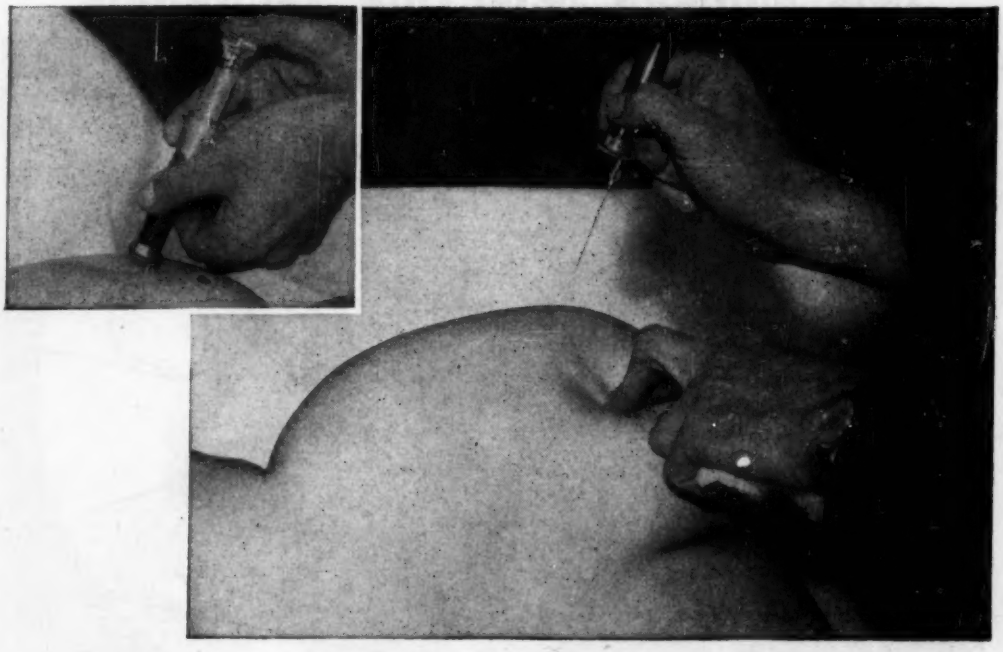
"From the present series it appears that this new iron-dextran complex is a notable advance in the treatment of the iron deficiency of pregnancy."[4]

1. LANCET, 1954, 2, 942. 2. B.M.J., 1954, 2, 1257. 3. B.M.J., 1954, 2, 1255. 4. LANCET, 1954, 2, 1245.



AMPOULES 2 ml. (100 mg. Fe) boxes 10 and 100
AMPOULES 5 ml. (250 mg. Fe) boxes 5 and 50

FULLY-DESCRIPTIVE LITERATURE, including dosage Calculator, on request. A Technical Information Service is at your disposal.



TECHNIQUE "IT WAS OBVIOUS during this study that the skill and care of the person giving the injections does much to minimise local discomfort and staining, and it is significant that only two patients failed to attend for further injections." (LANCET, 1954, 2, 1245.)

IMFERON IS THE FIRST EFFECTIVE IRON PREPARATION FOR INTRAMUSCULAR INJECTION

IT PROVIDES the rapid, reliable response of an order hitherto only obtainable with intravenous preparations: and it takes much less time to administer.

IMFERON IS indicated for the patient who is refractory to, or intolerant of, oral iron; and when a rapid response is required, as in anaemia of pregnancy.

IMFERON IRON-DEXTRAN COMPLEX TRADE MARK

I.M.

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE

A BENGER PRODUCT

THIS MODERN INJECTION TECHNIQUE

saves time and money

'Viules' reduce sterilization procedures to a minimum.

Does away with ampoule-filing.

With 'Viules' there is no transfer of solution to syringe.

No syringe breakage.

'VIULES' contain pre-measured doses of stable, sterile injections ready for immediate use in any suitable cartridge syringe. They offer simplicity, speed, efficiency, accuracy and economy in every branch of medicine.

Among the drugs now available are the following, in a range of convenient doses:—

ADRENALINE	LIVER EXTRACT	NIKETHAMIDE	PROGESTERONE
ATROPINE	LOBELINE	PAPAVERETUM & SCOPOLAMINE	PROCAINE PENICILLIN Aqueous and Oily Suspension
BISMUTH OXYCHLORIDE	METHADONE	PETHIDINE	STREPTOMYCIN
DIAMORPHINE	MORPHINE	PHENOBARBITONE SODIUM	TESTOSTERONE
ERGOMETRINE	MORPHINE & ATROPINE	PROCAINE & ADRENALINE	VITAMIN B12
HYOSCINE			

'VIULES'

single-dose injections in disposable cartridges

Full details will be gladly sent on request.

The Medical Department
BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM

Boots

9215

Antihistamines for old and young

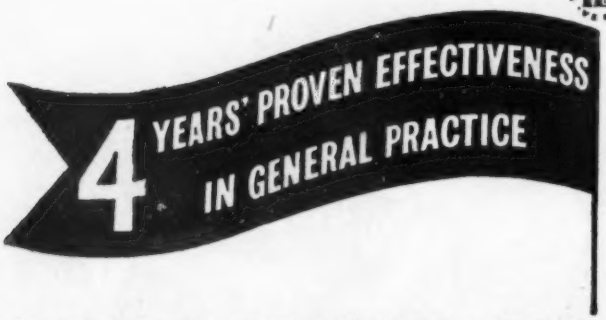
When the contents of Pandora's Box were released, Hope alone remained. To the patient of allergic diathesis, threatened by a veritable Pandora's Box of ills, the antihistamines 'Histantin' and 'Actidil' represent far more than hope.
For adults 'Histantin' is the product of choice, giving prolonged relief with a minimum of side-effects.
The new quick-acting antihistamine, 'Actidil', exerts its effect for about 12 hours and is also notable for low incidence of side-effects. 'Actidil' Elixir has been specially formulated and clinically tried for the treatment of allergic conditions in children.

'HISTANTIN', *50 mgm., is issued in bottles of 25, 100 and 500 at list prices (subject to usual discount) of 6/6, 24/6, 110/-.*

'ACTIDIL' *compressed products of 2·5 mgm. in bottles of 25 and 500 at list prices (subject) of 6/6 and 110/-.*

'ACTIDIL' ELIXIR *in bottles of 20 fluid ounces, for dispensing, at a list price (subject) of 15/-.*

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* **LONDON**



Over four years' usage in general medical practice throughout the world has established Chloromycetin* as today's foremost broad spectrum antibiotic. Among the significant advantages that have placed Chloromycetin in this unrivalled position are its rapidity and effectiveness of absorption, swift consistent response, outstanding tissue diffusibility plus a remarkable flexibility of treatment to meet varying clinical conditions. Development of resistance to Chloromycetin by the common pathogens is extremely rare and the facility with which it is absorbed accounts for the low incidence of gastro-intestinal upset.

CHLOROMYCETIN

THE ORIGINAL CHLORAMPHENICOL

- CHLOROMYCETIN CAPSULES
- SUSPENSION CHLOROMYCETIN PALMITATE
- CHLOROMYCETIN OPHTHALMIC
- CHLOROMYCETIN OPHTHALMIC OINTMENT
- CHLOROMYCETIN CREAM 1%
- CHLOROMYCETIN EAR DROPS 10%
- CHLOROMYCETIN INTRAMUSCULAR
- CHLORSTREPTIN CAPSULES
- CHLOROMYCETIN TOPICAL

* Trade Mark

PARKE, DAVIS & COMPANY, LIMITED *(Inc. U.S.A.)* Hounslow, Middlesex. *Tel: Hounslow 2361*
433

THE INCIDENCE OF LEUKÆMIA IN ANKYLOSING SPONDYLITIS TREATED WITH X RAYS

A PRELIMINARY REPORT

W. M. COURT BROWN
M.B., B.Sc. St. And., D.M.R., F.F.R.

JOHN D. ABBATT
M.B. Edin., D.M.R.

MEMBERS OF THE EXTERNAL SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL, DEPARTMENT OF MEDICINE, POSTGRADUATE MEDICAL SCHOOL OF LONDON

IN a discussion of a paper on the long-term evaluation of the treatment of ankylosing spondylitis with X rays (Robinson and Lampe 1948), Graham stated that 2 of his patients so treated had died of leukæmia. Since 1949, van Swaay (1954) has collected data on 7 people who had died from leukæmia and who also had X-ray treatment for ankylosing spondylitis.

In recent months an investigation has begun into the death-rate from leukæmia among people suffering from ankylosing spondylitis and treated with X rays. This investigation is being continued under the auspices of the Medical Research Council's working party on leukæmia research, and, while its final conclusions will not be reached for some considerable time, the findings to date are felt to be sufficiently important to warrant a preliminary report.

Provisional Findings

An attempt has been made to obtain information regarding the treatment of ankylosing spondylitis from all the radiotherapy centres of both England and Wales and of Scotland. The following information has been sought from each of fifty-eight different centres:

(1) The total number of patients treated with X rays for ankylosing spondylitis from 1940 to 1954 inclusively.
(2) The number of patients treated for the first time in each year of this fifteen-year period.
(3) The age and sex distribution.
(4) The number of patients given more than one course of X-ray treatment.
(5) The number of patients reporting back at intervals for medical examination.
(6) Records of any patient who had developed leukæmia, aplastic anæmia, or myelofibrosis.

Preliminary data have been collected on 9364 patients treated in thirty-seven Radiotherapy Centres, these including all except four of the major centres. The criterion for the inclusion of a patient in this series has been a diagnosis of ankylosing spondylitis at the time of his or her first X-ray treatment, even though subsequent to this the diagnosis may have been found to be in error.

It will be seen in the subsequent analyses of age and sex distribution, &c., that in each instance the number of patients analysed is smaller than the total number concerning which information has been obtained. The cause of this discrepancy is that many of the centres have not made a return of all the information that was requested. For this reason it has been found necessary, in order to estimate the number of cases of leukæmia that might be expected to occur, to make a number of assumptions in regard to the whole population, based on analyses carried out on parts of the population. To avoid any tendency to underestimate the expected number of cases of leukæmia, as these assumptions have had to be made, a number of safeguards have been adopted as will subsequently become clear.

Age-distribution

The age-distribution is known for 2697 patients of both sexes and is given in table I. The ages referred to are those of the patients when they were seen in a radiotherapy centre for the first time.

Sex-distribution

The sex-distribution is known in 4297 patients of whom 3679 are males and 618 are females. The ratio of males to females is 5·95 : 1.

Patients Kept under Observation

From the information supplied by seventeen radiotherapy centres concerning 3085 patients, an estimate has been made of the proportion of patients who are kept under observation after the conclusion of their X-ray treatment. Of the total of 3085 patients, 1731 (56%) are periodically reporting back to the various centres for examination or are known to have died, whilst the remaining 1354 patients (44%) have been lost sight of, either as a result of failure of the patients to report back to these centres, or because periodical medical examinations have been dispensed with on account of the continuing good health of the patients.

TABLE I—AGE-DISTRIBUTION OF 2697 PATIENTS

—	0–14	15–24	25–34	35–44	45–54	55–64	65–74	75–
Absolute numbers	4	415	1000	733	363	156	25	1
% of total ..	0·15	15·39	37·08	27·18	13·46	5·78	0·92	0·04

More than One Course of X-ray Treatment

In a proportion of patients it is found necessary to give more than one course of X-ray treatment to keep the disease under control. In a series of 2361 patients, 797 (33·8%) were given more than one treatment course.

Patients who got Leukæmia

Records have been obtained of 25 patients who have developed leukæmia (table II), and this total of cases is likely to be incomplete as many of the 9364 patients—perhaps as many as 44%—have not been kept under observation. But it does not necessarily follow that the number of deaths is as incomplete as was the follow-up of the patients, because the fact of death may have been more readily reported back to the radiotherapy centre concerned. On the other hand, it must be borne in mind that a number of patients are likely to fail to report back to the centres because they have died, but the centres themselves, unaware of the cause for non-attendance, may record them as being "lost sight of."

4 patients are included in whom leukæmia and ankylosing spondylitis were considered to be co-existent when the patients were given X-ray treatment for the first time.

TABLE II—RECORDED CASES OF LEUKÆMIA

Total	Age-distribution (years)		No. with apparent co-existence of leukæmia and spondylitis	No. having one treatment course only	No. having more than one treatment course	Latent period† (months)	
	Range	Mean				Range	Mean
25 (21)*	17–65	36	4 (4)*	6 (5)*	15 (12)*	2–161	74

Types of leukæmia

Clinical		Cytological			
Acute	Chronic	Lymphatic	Myeloid	Monocytic	Unspecified
19	6	2	14	5	4

* Figures in parentheses refer to numbers of patients notified to the Registrar-General as dying from leukæmia.

† Time interval between start of first course of treatment and the clinical recognition of leukæmia, in those patients who did not apparently have co-existent leukæmia at the time of first treatment of their ankylosing spondylitis.

Expected and Observed Deaths from Leukæmia

The death-rates from leukæmia in England and Wales have increased steadily since 1940 (table III). There has been a similar but less consistent upward trend in the Scottish death-rates.

In this preliminary report an approximate estimate of the number of deaths from leukæmia which might have been expected to occur among all the 9364 patients has been made in the following way.

TABLE III—DEATH-RATES FROM LEUKÆMIA FOR ENGLAND AND WALES AND FOR SCOTLAND, 1940–1953 (REGISTRAR-GENERAL)

Year	Deaths per million living persons			
	England and Wales			Scotland
	Male	Female	Both sexes	Both sexes
1940	30	23	26	38
1941	29	22	25	28
1942	34	24	28	27
1943	38	25	30	32
1944	38	26	31	32
1945	40	29	34	32
1946	41	30	35	34
1947	38	32	35	32
1948	40	31	35	30
1949	44	35	40	39
1950	47	37	42	39
1951	47	41	44	43
1952	52	41	46	41
1953	53	44	48	38

The numbers of patients known to have been aged 0–14, 15–24, 25–34, &c., shown in table I have been multiplied by the age-specific death-rates for men in England and Wales in 1953. The rates for men have been used because the greater proportion of the treated patients whose sex was known were men (86%) and because the death-rate from leukæmia was, in general, slightly higher in men than in women. The rates for 1953 were used because the death-rate from leukæmia has been rising throughout the period studied (table III), and by using the latest (and highest) rates available the expected number of deaths will be overestimated rather than underestimated.

If it is assumed that the age-distribution of the whole 9364 patients is the same as that of the 2697 patients analysed in table I, then the total number of deaths, expected to have occurred in one year can be obtained by multiplying the sum of the expected numbers for each group by the factor 3·472 (9364/2697).

At this point a further consideration must be taken into account. The patients were treated up to fifteen years ago and, therefore, have been exposed to the risk of dying for a number of years. During these years the patients have also aged and, depending upon their age-groups, have been exposed to a greater or lesser risk of dying as they aged. In a series of 6187 patients from twenty-six radiotherapy centres, only 12% of the patients entered the series during the first quinquennium and as many as 49·3% entered it during the last quinquennium. If it is assumed that all the patients in the series have, on the average, been observed for ten years, the expected number of leukæmia deaths for the whole period will not be underestimated and will be obtained by multiplying by a further factor of ten. Also, on the average, all the patients will have aged five years during their period of observation, so that instead of multiplying the numbers of patients in the age-groups 0–14, 15–24, 25–34, &c., by the mortality-rates for these groups themselves they must be multiplied by the mortality-rates for the age-groups five years in advance, i.e., 5–19, 20–29, 30–39, &c.

The total number of leukæmia deaths expected for the whole period is, therefore, the sum of the expected numbers in the individual age-groups (0·1125) multiplied by 3·472 × 10—that is, 3·9.

Only those deaths observed in the series and certified as being due to leukæmia can be compared with the estimate of the expected number of deaths since the estimate of the expected number of deaths is based on the causes of death certified to the Registrar-General. 21 of the observed cases of leukæmia were certified as dying from leukæmia. If it is assumed that no other cases of leukæmia have occurred in the untraced sections of this population then the ratio of observed deaths to expected deaths is 21 : 3·9 or 5·4 : 1. If, however, it is assumed that the same proportion of leukæmia deaths has occurred in the untraced section of the irradiated population as in the traced section, then the ratio of observed to expected deaths may well be as high as 37 : 3·9 or 9·5 : 1.

12 of the patients certified as dying from leukæmia were given more than one course of X-ray treatment. From the information provided by thirteen centres about 2361 patients, 33·8% were found to have had more than one treatment course. If it is assumed that this proportion is the same in the whole population of 9364 patients, the ratio of observed deaths to expected deaths is 12 : 1·32 or 9·1 : 1. It is not possible to make an estimate of the proportion of those patients given more than one treatment course who are untraced, and consequently an estimate cannot be made of the total number of cases of leukæmia that may have occurred in that group.*

Discussion

The object of this preliminary report is to call attention to the high number of deaths from leukæmia amongst a series of patients suffering from ankylosing spondylitis and treated with X rays. Other causes of death, such as aplastic anæmia, will be dealt with in a later communication.

In this report a number of assumptions have been made, especially in regard to the age-distribution. Thus, it is possible that the age-distribution of ankylosing spondylitis differs in the two sexes and it is likely that the mean age of these patients will have increased somewhat in the latter part of the fifteen-year period when fewer patients were being referred for treatment from the Armed Services. It is, however, probable that any tendency that these assumptions may have had to underestimate the expected number of deaths is more than offset by the use of the highest recorded death-rate from leukæmia in this calculation, by the absence of any correction for sex-distribution, and by the assumption of a mean period of observation of ten years.

4 patients have died in whom leukæmia and ankylosing spondylitis were considered to be co-existent before the institution of X-ray treatment. Also 1 patient died of leukæmia two months after the start of X-ray treatment, and his leukæmic state may have been present when treatment was begun, though unrecognised. Bearing in mind that the estimated number of leukæmia deaths—i.e., 3·9—is likely to be artificially high through the adoption of a number of safeguards, and that it also relates to a ten-year period of observation, it is not possible to exclude some association between the two diseases. No attempt has been made to review the diagnoses in any of those cases in which both leukæmia and ankylosing spondylitis were said to be co-existent. If both diagnoses are correct in each of the 4 cases, there is a possibility that persons suffering from ankylosing spondylitis are more liable to develop leukæmia than the general population of England and Wales of the same age-distribution and sex-distribution. On the other hand, it is possible that in some cases errors in diagnosis have been made, and that the pain and disability suffered by the patients were solely due to the leukæmic processes. If this were so the argument in favour of an association between the two diseases would be less strong. Bearing

* If it is assumed that the same proportion of the patients receiving more than one course of X-ray treatment is untraced as is the case for the whole population, then the ratio of observed to expected cases of leukæmia would be as high as 21 : 1·32 or 15·9 : 1. It is, however, probable that patients receiving multiple courses of treatment are more likely to be kept under observation than those given only a single course of treatment.

in mind these possibilities it is now pertinent to examine the evidence suggesting that X-irradiation may have been a major cause of the unexpectedly high numbers of patients found to have leukæmia.

15 patients who had more than one course of X-ray treatment developed leukæmia, while 6 patients had leukæmia after only one course of treatment. It has already been shown that 33·8% of a series of 2361 patients had more than one treatment course. Assuming that the same proportion of the total population of 9364 patients had more than one course, then 1 patient in every 211 patients treated in this way developed leukæmia in contrast to 1 patient in every 1033 patients who had only one course of treatment. If these groups of patients are comparable with regard to sex, age, and duration of observation, the difference between them in the incidence of leukæmia is appreciable ($\chi^2 = 11{\cdot}68 : n = 1 : P < 0{\cdot}001$). This finding that the incidence is higher among those treated more than once is only to be expected if X-irradiation is an important factor in determining the occurrence of leukæmia, for it is reasonable to presume that the greater the number of treatment courses the greater the risk of leukæmia.

Before the X-ray treatment can be finally accepted as a major cause two further considerations must be examined. In the first place it is not possible to be certain that some of the patients who developed leukæmia after a second course of treatment were not, in fact, given this second course on account of pain and disability caused by the leukæmic process, this not being recognised at the time. If this were the case then the significance of the difference between the two groups would be diminished and might even disappear. While in the cases that have been reported there is no evidence that this has occurred, it is a theoretical possibility that must be considered. In the second place, it is fair to assume that those patients requiring more than one treatment course were suffering from a more severe form of ankylosing spondylitis than those requiring only one course of treatment. There is no evidence, either clinical or statistical, to refute an argument that the severer form of the disease is not itself associated with a greater predisposition towards the development of leukæmia than the less severe form.

It is clear that on the evidence presented so far, no final conclusions can be reached on the part played by X-ray therapy in the production of the increased numbers of cases of leukæmia in this series of cases of ankylosing spondylitis. It is, therefore, relevant at this point to discuss the reported examples of the development of leukæmia following the exposure of persons to ionising radiations, apart from the purpose of treating malignant disease.

It is now recognised that an increase has occurred in the death-rates from leukæmia in both Nagasaki and Hiroshima, attributable to the atomic explosions occurring over those cities in 1945 (Folley et al. 1952, Lange et al. 1954, Moloney and Kastenbaum 1955). Merklen et al. (1925) reported the development of chronic myeloid leukæmia in a woman seven years after X-ray treatment for uterine fibromata, and Gerbis (1943) and Lynch (1951) reported acute myeloid leukæmia following the use of X rays in the treatment of non-malignant skin lesions. More recently, Simpson et al. (1955) have claimed a statistically significant increase in the incidence of leukæmia and of carcinoma of the thyroid in a series of children given X-ray treatment in infancy because of suspected enlargement of the thymus gland. There is evidence also that occupational exposure to ionising radiations may be associated with an abnormally high death-rate from leukæmia. In particular, a number of reports establish a good case for such an increased death-rate amongst physicians practising radiology (Ulrich 1946, March 1950, Peller and Pick 1952).

The evidence from the literature suggests that exposure to ionising radiations can be leukæmogenic in man. Leukæmia has occurred in association with an acute whole-body exposure following the explosion of a nuclear device, with various forms of radiotherapy, and with chronic occupational exposure. On this basis, and in spite of the difficulties in the interpretation of the present findings, it is perfectly reasonable to conclude that some, perhaps the great majority, of the cases of leukæmia found in this series have occurred as a result of X-ray treatment. The fact that sufferers from ankylosing spondylitis may be unusually susceptible to the development of leukæmia has also been stressed, but only further research can evaluate the relative parts played by the possible susceptibility of these patients to leukæmia and the X-ray treatment.

In spite of these findings it would be wrong to withhold X-ray treatment from those suffering from ankylosing spondylitis. It is common knowledge that the life expectancy of many of these patients is reduced by their disability, and most authorities agree that radiotherapy has in many instances a beneficial effect. What is certain, however, is that no-one should be treated with X rays unless the diagnosis is clearly established, and that a second course of X-ray treatment should not be given unless absolutely necessary.

Summary

(1) An inquiry is being made into the death-rate from leukæmia amongst patients suffering from ankylosing spondylitis and treated with X rays.

(2) A series of 9364 patients treated from 1940 to 1954 inclusively has been analysed and the expected number of deaths from leukæmia in this series has been calculated on the basis of the male age-specific death-rates from leukæmia in England and Wales for 1953.

(3) The observed deaths from leukæmia have been found to be at least five times, and possibly as many as ten times, the expected number of such deaths, and amongst those patients given more than one course of X-ray treatment the observed deaths are probably at least nine times those expected to occur.

(4) Evidence has been put forward which suggests that patients with ankylosing spondylitis may be unusually susceptible to the development of leukæmia. But also it is likely that the incidence of leukæmia is appreciably raised amongst those patients given more than one course of X-ray treatment.

(5) Reviewing the above findings in the light of a number of reports in the medical literature, it is concluded that some, if not the majority, of the observed cases of leukæmia may be attributable to X-irradiation.

(6) Further investigation is necessary to confirm these findings.

We are grateful to all those radiotherapists and other colleagues who have kindly supplied us with data. A more detailed acknowledgment will be made in a later communication.

We would like to acknowledge the help given to us in the preparation of this paper by Prof. L. J. Witts, Prof. B. W. Windeyer (with whose coöperation the early stages of the investigation were made), Prof. A. Bradford Hill, and Dr. W. R. S. Doll.

REFERENCES

Folley, J. H., Borges, W., Yamawaki, T. (1952) *Amer. J. Med.* **13**, 311.
Gerbis, H. (1943) *Dtsch. med. Wschr.* **69**, 540.
Lange, R. D., Moloney, W. C., Yamawaki, T. (1954) *Blood*, **9**, 574.
Lynch, F. W. (1951) *Arch. Derm. Syph., Chicago*, **63**, 503.
March, H. (1950) *Amer. J. med. Sci.* **220**, 282.
Merklen, P., Wolf, Neel, (1925) *Bull. Acad. Méd., Paris*, **93** 364.
Moloney, W. C., Kastenbaum, M. A. (1955) *Science*, **121**, 308.
Peller, S., Pick, P. (1952) *Amer. J. med. Sci.* **224**, 154.
Robinson, W. D., Lampe, I. (1948) *Ann. rheum. Dis.* **7**, 245.
Simpson, C. L., Hempelmann, L. H., Fuller, L. M. (1955) *Radiology* (in the press).
Ulrich, H. (1946) *New Engl. J. Med.* **234**, 45.
van Swaay, H. (1954) Personal communication.

THE NATURAL HISTORY OF PERIPHERAL TUBERCULOUS LYMPHADENITIS ASSOCIATED WITH A VISIBLE PRIMARY FOCUS

F. J. W. MILLER
M.D. Durh., M.R.C.P., D.C.H.
LECTURER IN PÆDIATRICS

JOAN M. CASHMAN *
M.B. Durh., D.C.H.
RESEARCH ASSISTANT

DEPARTMENT OF CHILD HEALTH, ROYAL VICTORIA INFIRMARY, NEWCASTLE UPON TYNE

KNOWLEDGE of the relation of the time and site of the primary tuberculous infection to its manifestation and observation of the ultimate result are particularly important in the study of peripheral tuberculous lymphadenitis, which is still often said to be "most often a manifestation of generalised tuberculous infection" (American Trudeau Society 1954).

Since 1947 we have been studying primary tuberculosis of skin and mucosa. Primary infection on these sites has proved to be much more common than at first seemed possible, and 28 cases have been described (Miller 1953). Since then further cases have been seen and, if we include those with visible primary lesions of tonsils and mouth, we have 40 children with visible primary tuberculosis who have been under observation for a minimum of two years. In this group the site and, within narrow limits, the time of primary infection are known, and we have observed the behaviour of the regional glands in neck, groins, and axillæ. Though the cases were first seen in differing stages of evolution, we think they form the basis of a study of the natural history of peripheral tuberculous lymphadenitis.

Therefore we report here the changes in the glands in these 40 children; but before doing so we must explain our diagnosis of primary tuberculosis and distinguish between clinical and experimental work—i.e., between probability and proof. In clinical work we do not impose our own conditions on the material studied and we deal with reasonable probabilities. Thus if we are to prove that any manifestation of tuberculosis is part of a primary complex—i.e., primary focus and regional glands—we should observe the tuberculin conversion of the patient as well as demonstrate a primary tuberculous focus and its associated regional glands. This proof is usually absent apart from occasional, almost accidental, observations. But if we can show by a combination of clinical, histological, and bacteriological techniques that a tuberculous focus exists, and that the regional glands are the site of caseous change, we can use the pathological studies of Ghon and Terplan to support the probability that we are witnessing a primary infection in the person concerned (Terplan 1940).

It is strange that there is no agreement on the pathogenesis of tuberculous lymphadenitis, and that we cannot find an accurate account of the natural history of this condition. The main reason seems to be that no worker has described a series of cases in which the time of the primary infection, whether recent or remote, was known accurately, and most accounts do not discuss the presence or absence of manifestations of tuberculosis elsewhere in the body.

The best published report that we have found is that of Thompson (1940), also working on Tyneside, who reviewed 324 cases of tuberculosis of peripheral lymph-nodes. His purpose was more to describe the pathogenesis than the natural history, but he did conclude "That whatever method [of treatment] was employed the disease usually followed a prolonged and relapsing course, tending ultimately to local healing with a greater or lesser degree of scar formation accompanied by contraction with fibrosis or calcification of the affected lymph glands."

He said also

"There is some doubt whether gross tuberculosis occurs in lymph nodes infected other than during the primary phase," and "it follows that the group of lymph nodes initially involved should indicate the portal of entry of the infection."

We feel that by observing a group with a known pathogenesis and time of infection we have the opportunity to make an accurate record of the natural history in a small well-defined group of cases.

Clinical Cases*

The distribution of the primary foci and the regional glands is shown in figs. 1 and 2. All the children were tuberculin-positive, the tuberculous nature of the process was proved, and all the children were observed for at least two years after infection.

Tuberculous lymphadenitis is still common in the North-east of England, and 224 cases (2%) were seen in 11,400 admissions to the children's department of the Royal Victoria Infirmary in the seven years 1947–53.

Descriptions of representative lesions in skin and mucosæ have already been given. In table I nos. 1–23 and 25–28 refer to the same cases: the original case 24 has been excluded because he was an adult, and another has been substituted (Miller 1953).

The behaviour of the glands can perhaps best be described by answering five questions:, How do they present? How many soften to form abscesses, and how long do they take to do so? How many calcify and in how long? What are the complications of the visible primary complex? How long do the glands take to heal after spontaneous rupture has occurred, and what is the period of morbidity?

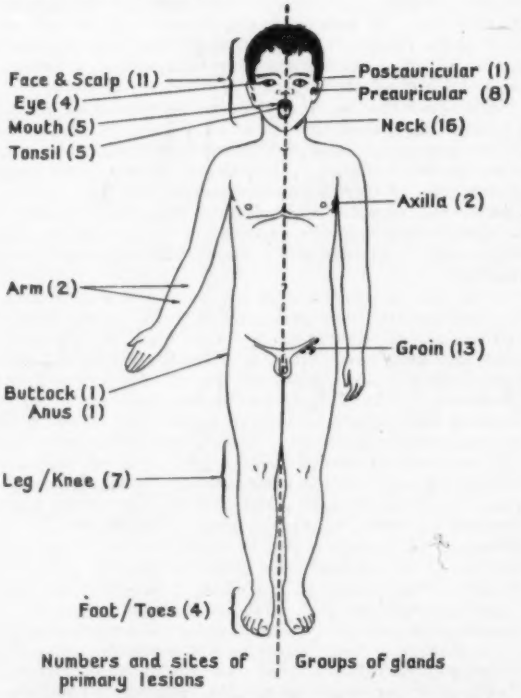


Fig. 1—Distribution of sites of primary infection and groups of glands affected.

* Working with a grant from King's College Rag Appeal Fund, 1950.

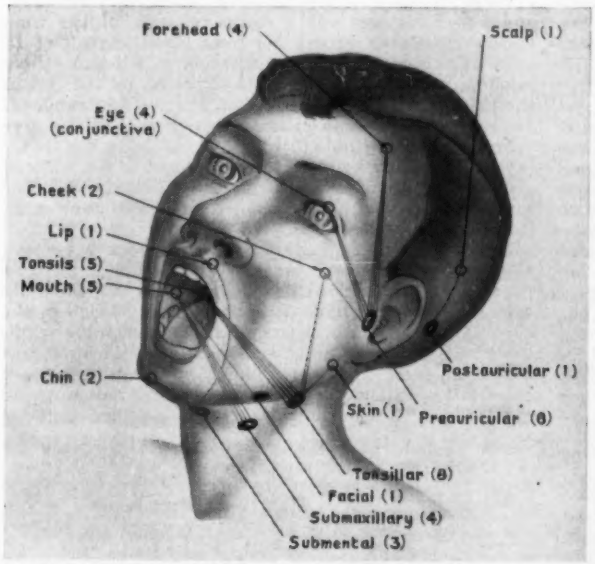


Fig. 2—Relationship between site of primary infection and regional glands first infected in head and neck.

○ = site of primary infection: ● = first regional gland.

How do the glands present?

Table I shows that 23 cases came to hospital after the accidental discovery by the mother or the child of a painless gland swelling: in another 4 the onset was much more acute with rapid swelling, pyrexia, and some pain simulating an acute pyococcal adenitis; of these, in case 20 the onset followed a cut by a piece of broken glass and was so rapid, with such acute swelling, that a double infection was almost certain.

In 7 cases a painless primary lesion was the first complaint, whereas in another 5 the primary lesion and the glands were noted simultaneously; the remaining child was admitted to hospital with miliary tuberculosis and the primary focus then discovered.

The absence of pain often seemed to delay consultation with the doctor; no less than 23 of the glands were already soft when first seen, and in 10 of these the abscesses had already ruptured. In the remaining 17 cases the glands were still firm.

In 8 of the 12 cases where the primary lesion, alone or simultaneously with the gland, had been the first complaint, an abscess had already formed when the child was first seen in hospital.

Less than half the children (15) had any systemic illness at the time of the appearance of the glands; pyrexia varied from a slightly raised temperature lasting a few days to a definite illness—the "fever of onset"—lasting three weeks (Wallgren 1948).

TABLE I—SYNOPSIS OF DATA OF 40 CASES OF PERIPHERAL TUBERCULOUS LYMPHADENITIS

Case no.	Site of primary lesion	Primary gland group	State of gland when first seen	Time from infection to softening	Course and surgical management	Pyrexia at onset	First symptom
1	Shin	Femoral	Firm	4 weeks	Aspirated	–	Swelling in groin
2	Cheek	Preauricular	Firm	5 mos.	Ruptured	–	Spot on face and swelling in front of ear
3	Knee	Inguinal	Soft	Not known	Ruptured	+	Acute inguinal adenitis
4	Heel	Inguinal	Ruptured	8 weeks	Incised	–	Inguinal adenitis and lack of healing
5	Knee	Inguinal	Ruptured	Not recorded	Incised	–	Inguinal swelling
6	Foot	Inguinal	Soft	4 mos.	Incised	+ (injury)	Lack of healing after accident
7	Arm	Axillary	Soft	2 yr.	Excised	–	Axillary adenitis
8	Toe	Inguinal	Ruptured	3 mos.	Incised	+	Swelling in groin
9	Knee	Inguinal	Ruptured	8 mos.	Excised	–	Red area on knee
10	Calf	Inguinal	Ruptured	3 mos.	Excised	+	Acute inguinal adenitis
11	Knee	Inguinal	Soft	4–5 mos.	Excised	–	Scab did not heal
12	Chin	Submental	Soft	3 mos.	Aspirated	–	Swelling under chin
13	Anus	Upper inguinal (bilateral)	Ruptured	2 weeks	Aspirated	+	Swelling in groin
14	Chin	Submental	Ruptured	3 mos.	Ruptured	–	Lesion on chin, submental abscess
15	Cheek	Tonsillar	Firm	11 weeks	Aspirated, ruptured	–	Spot on face, tonsillar gland swelling
16	Forehead	Preauricular	Ruptured	1 month	Incised	Erythema nodosum	Wound did not heal
17	Forehead	Preauricular	Ruptured	3 weeks	Incised	–	Scab on forehead and abscess in front of ear
18	Scalp	Postauricular	Soft	5 mos.	Ruptured	+ (injury)	Postauricular abscess
19	Calf	Inguinal	Soft	Not known	Incised	Erythema nodosum	Ill on admission after measles
20	Foot	Inguinal	Firm	6 weeks	Excised	+	Septic foot and acute adenitis
21	Eye	Preauricular	Soft	8 weeks	Ruptured	–	Sore eye
22	Eye	Tonsillar	Firm	3 mos.	Incised	Erythema nodosum	Swelling of tonsillar gland
23	Eye	Preauricular	Soft	8 mos.	Ruptured	–	Chronic conjunctivitis
24	Buttock	Lower inguinal (bilateral)	Ruptured	4 weeks	Incised	–	Abscess in groin
25	Eye	Preauricular	Firm	6 weeks	Incised	–	Small swelling in front of ear
26	Mouth	Facial (supra-mandibular)	Firm	12 mos.	Incised	–	Ulcer in mouth
27	Mouth	Submaxillary	Firm	6 weeks	Aspirated	+	Submaxillary swelling
28	Mouth	Submaxillary	Soft	10 weeks	Aspirated, incised	–	Submaxillary swelling
29	Skin above lip	Submental	Firm	7 mos.	Ruptured	+	Swelling in neck
30	Skin below ear	Tonsillar	Soft	4 weeks	Incised	–	Swelling in neck
31	Forehead	Preauricular	Soft	32 mos.	Aspirated, incised	+	Swelling of cut, swelling in front of ear
32	Forearm	Axillary	Soft	3 mos.	Aspirated, incised	–	Swelling in axilla
33	Forehead	Preauricular	Firm	14 weeks	Incised	–	Lump under jaw
34	Mouth	Submaxillary	Firm	..	Excised	–	Lump under jaw
35	Mouth	Submaxillary	Firm	..	Excised	–	Swollen jaw
36	Tonsil	Tonsillar	Firm	..	Excised	+	Lump in neck, pyrexia
37	Tonsil	Tonsillar	Firm	1 month	Incised	Erythema nodosum	Lump in neck
38	Tonsil	Tonsillar	Firm	..	Excised	+	Swollen glands
39	Tonsil	Tonsillar	Firm	..	Excised	+	Swollen glands
40	Tonsil	Tonsillar	Firm	..	Excised	–	Swollen glands

TABLE II—TIME FROM INFECTION TO ABSCESS FORMATION

Time (mos.)	< 3	3–6	9	12	24	32	Unknown
No. of cases	14	11	3	1	1	1	3

4 of these had erythema nodosum, and 4 others the acute reaction and severe lymphadenitis with pain simulating pyococcal infection (Miller 1952). In 23 there was either no alteration of health or it was so slight as to escape notice. In 2 cases the tuberculosis was a complication of severe trauma received in a road accident. The source of infection and the relationship to trauma have already been considered (Miller 1953).

29 of the children had radiographs taken of the chest and 11 had radiographs of the abdomen when they were first seen. Calcification was not visible in any: in case 14 a second active primary complex was seen in the lung, and case 19 had miliary tuberculosis. These were the only cases with clinical evidence of tuberculosis other than the primary complex.

How many glands soften and how long do they take to do so?

We have already stated that 23 of the glands had softened to form abscesses when they were first seen and the remaining 17 were firm. 6 of the firm glands were removed by local dissection before an abscess formed. In the remaining 11 abscesses formed, making a total of 34 abscesses in the 40 cases. No less than 25 had softened within six months and 29 within a year (table II).

Of the 12 glands which were firm when first seen and went on to soften 3 were treated with streptomycin while still firm. They diminished in size as the periadenitis resolved, but all ultimately softened—i.e., all the glands not removed when firm eventually formed abscesses.

In how many cases and after how long did radiographic calcification take place?

We were concerned to discover how many of our cases developed calcium in the glands, and when it appeared. If all or most of these proved cases did so, the presence of calcium can be used in other series to support a diagnosis of tuberculosis and to estimate how long the infection has been present.

In 28 of the 40 children visible calcium developed at the site of the regional lymphatic glands. Of the 12 others 4 had the glands excised (3 before and 1 after softening had taken place), 1 died, and 2 have been infected just over two years. Possibly we may yet detect calcium in these 2 and in some of those whose glands were excised (3 of the patients in whom the presenting glands were firm when excised have developed calcium in neighbouring glands), but we do not know why the remaining 5 do not show calcification—possibly all the caseous material was discharged.

We were not able to radiograph each child annually, and we cannot set out a complete table of the time of the appearance of calcium from infection, but of 15 cases examined a year after infection only 4 had visible calcium, whereas 18 other cases appeared by the end of the third year, making a total of 22 from 35 examined. In 24 of the 28 cases calcium was present within five years of infection (table III).

Calcification is therefore to be expected in the regional glands of a primary lesion on skin or mucosa, and in our series was seen within our period of observation in 28 from 39 possible cases.

36 of the children had radiographs of the chest and abdomen two or more years after infection. Case 14 proved to have calcified hilar glands (this was the child who was known to have an active primary lesion in the chest at the same time as the primary lesion on the skin); the remaining chest films were clear. Calcification was shown in three abdominal films. Two of these were calcification in the deep iliac glands of 2 patients who had primary lesions on the leg and calcified inguinal glands. The third was an unexpected finding in 1 of the children with a primary tonsillar infection and calcified cervical glands. Of the remaining 4 children 1 died, and 3, though seen for two or more years after infection, did not attend for subsequent radiography.

TABLE III—RELATIONSHIP OF CALCIFICATION TO TIME OF INFECTION

Radiographic examination of regional glands	Calcification	Years after infection								Total
		0	1	2	3	4	5	6	7	
First ..	Present	..	4	1	6	1	0	1	1	14
	Absent	14	5	4	1	0	1	0	1	..
Subsequent	Present for first time	..	0	7	4	1	2	..	..	14
	Still absent	..	6	7	6	2	2	1	2	..
	Total calcified	..	4	12	22	24	26	27	28	28

What are the complications?

1 child developed miliary tuberculosis and fatal tuberculous meningitis. 3 of the 40 children had erythema nodosum, 3 others phlyctenular conjunctivitis, and 1 both. No case of bone or joint tuberculosis has yet occurred in these 40 children.

The commonest complication of the primary complex was abscess formation in the group of glands draining from the primary gland. Secondary abscesses did not occur in the 6 children whose primary glands were removed by dissection before softening, but in the 33 others (excluding the death) there were 17 who had subsequent abscesses in glands further down the lymphatic chain. These usually appeared within a year of the first abscess, but 1 appeared as long as seven years afterwards. In 1 child, whose glands had not broken

TABLE IV—TIMES BETWEEN SOFTENING OF SUBSEQUENT ABSCESSES

Case no.	First abscess	Interval	Second abscess	Interval	Third abscess	Interval	Fourth abscess	Interval	Fifth abscess
2	Preauricular	5 mos.	Tonsillar	..	..	..	..	..	..
5	Inguinal	6 mos.	Deep iliac	..	..	..	..	..	..
8	Inguinal	3 mos.	Inguinal	30 mos.	Deep iliac	..	..	..	..
14	Submental	3 mos.	Upper deep cervical	..	..	..	..	..	..
16	Preauricular	2 mos.	Tonsillar	6 mos.	Post-sternomastoid	..	..	..	..
17	Preauricular	11 mos.	Tonsillar	1 month	Post-sternomastoid	17 mos.	Upper deep cervical	3 mos.	Preauricular
18	Postauricular	Local recurrence at intervals of 4 mos., 10 mos., and 7 mos.							
21	Preauricular	4 mos.	Tonsillar	..	..	..	..	..	..
22	Tonsillar	15 mos.	Submaxillary	..	..	..	..	..	..
25	Preauricular	5 mos.	Tonsillar	6 mos.	Post-sternomastoid	..	..	..	..
26	Facia	6 mos.	Submaxillary	..	..	..	..	..	..
27	Submaxillary	13 mos.	Submaxillary	..	..	..	..	..	..
28	Submaxillary	3 mos.	Submaxillary	3 yr.	Tonsillar	..	..	..	..
29	Submental	6 yr.	Submaxillary	..	..	..	..	..	..
31*	Preauricular	..	Tonsillar	..	Upper deep cervical	..	..	..	..
33	Preauricular	3 mos.	Tonsillar	15 mos.	Post-sternomastoid	..	..	..	..
37	Tonsillar	4 mos.	Upper deep cervical	..	..	..	..	..	..

* All softened simultaneously after measles 3 years after primary infection.

TABLE V—TIME OF HEALING OF ABSCESSES

Abscesses	No. of cases	Healed by first intention	Months from first operation (or rupture if no operation)				
			<3	3–6	12	>12	Not recorded
Ruptured spontaneously:							
Excised	2	1	..	1	..	..	..
Incised or aspirated	8	1	4	2	1	..	..
No operation ..	7	..	1	1	..	3	2
Softened but did not rupture:							
Excised	5	4	..	..	1	..	..
Incised or aspirated	12	1	5	3	1	..	2
Excised while firm	6	6	..	..	..	..	..
Total	40	13	10	7	3	3	4

down for three years after primary infection on the forehead, the preauricular, tonsillar, and post-sternomastoid glands all softened simultaneously after measles. 7 of these 17 children had not only a second abscess but also a third further down the path of lymphatic drainage: thus in case 33 the preauricular gland was first involved, the tonsillar second, and the posterior sternomastoid third. Case 17 had 5 abscesses (table IV).

How long does healing take after spontaneous rupture or operation, and what is the total period of morbidity?

All the cases eventually healed, but Thompson's opinion, quoted above, of the natural course of tuberculous lymphadenitis with abscess formation seems to be valid still for the patients we see in hospital. The glands which underwent spontaneous rupture, or were incised, were often slow to heal or broke down after initial healing. So far as it affected the natural history, the management is described here.

Of the 17 glands firm when seen 6 were excised and healed by first intention. Of the 34 which softened 17 ruptured spontaneously (3 of which were firm when first seen and 4 soft), 2 were excised, 8 incised or aspirated,

TABLE VI—MORBIDITY

Duration (from infection) of inpatient and outpatient attendance at hospital

	Months				Years					
Time ..	0–6	6–12	12–18	18–24	2–3	3–4	4–5	5–6	6–7	7–8
Numbers	1	12	6	4	8	3	4	..	1	1

and 7 allowed to heal without intervention. The times taken for healing are shown in table V.

Of the remainder of the soft glands (8 firm and 9 soft when first seen) 5 were excised and 12 aspirated or incised. The duration of the sinus is shown in table V.

Table V refers to the time taken for the first gland abscess to heal, but many children had more than one abscess, or their general condition made a long period of hospital care or outpatient supervision necessary. The total duration of this morbidity is shown in table VI. The time has been taken from infection to discharge from hospital, sanatorium, or outpatient supervision and does not include visits made at our request. 2 children are still attending—four years and two years after infection. In some cases there was a gap of a year or two between hospital attendances. Moreover it is always possible that further complications may arise.

Discussion

We have shown that the regional glands in 40 cases of primary tuberculosis with visible primary foci showed a striking tendency to soften. Indeed all did so except those removed by dissection while firm. In a few cases softening did not take place until more than a year after infection and after calcium had appeared. The objection might be raised that, because 23 of the glands had softened when first seen, the series was highly selected; but there were 11 firm when first seen which were not excised, and all these softened also.

All the children except 3 came from "artisan" or "labouring" families. We do not know whether tuberculous adenitis in children of other social groups has the same tendency to soften, but we do know that our experience in these 40 cases is in accord with the natural history of cases of tuberculous adenitis seen in our department, whether or not associated with a visible primary focus. But the question always remains: how often and in what circumstances does primary tuberculous peripheral lymphadenitis occur without softening but with the deposition of calcium? We have not yet a precise answer, but we think it must be uncommon, probably occurring mainly in the upper social groups. Another piece of indirect evidence is the extreme rarity with which we find calcium in the neck in routine radiography without an overlying scar or sign of abscess. We therefore feel that primary tuberculous peripheral lymphadenitis, as seen in the north-east of England, is likely to proceed in most cases to abscess formation.

If an abscess does form in the primary gland, the possibility of an abscess in the next group of glands is high—17 in 33 (half our children). This prolongs the period of morbidity and makes a good cosmetic result more difficult to obtain.

We have shown that calcification is visible in most of our cases and commonly appears in the second and third years after infection but possibly later. Its appearance indicates the cause of a lymphadenitis of doubtful origin and allows an estimate of the time of infection where this is unknown. Furthermore the presence of calcium can be used as a method of investigating the natural history of tuberculous lymphadenitis, and we hope to continue this study by a review of some 350 cases seen in our department in seven years.

Summary

We have studied the behaviour of the regional glands in 40 cases of primary tuberculosis of the skin and mucosa.

In all the cases other than those 6 in which firm glands were removed by dissection the glands softened and abscesses formed. In most cases this took place within six months of infection.

In 28 of 39 cases calcium was seen in the glands—none in the first year, but in more than half the cases in two or three years. In England the presence of calcium can therefore be used as diagnostic evidence and to estimate the time since primary infection.

We wish to thank our colleagues in the department of child health and other departments of the hospital who referred cases of visible primary tuberculosis, and the members of the departments of bacteriology, pathology, and radiology for their help.

REFERENCES

American Trudeau Society (1954) *Amer. Rev. Tuberc.* **70**, 949.
Miller, F. J. W. (1952) *Brit. med. J.* ii, 1015.
— (1953) *Lancet*, i, 5.
Terplan, K. (1940) *Amer. Rev. Tuberc.* **40**, suppl. 1.
Thompson, B. C. (1940) *Tubercle*, **21**, 217.
Wallgren, A. (1948) *Ibid*, **29**, 245.

"... That was the trouble with courage, perhaps: too many men had it. The men in brown and the men in green; the men in the Marauders and the men in the Junkers; the men fighting each other with stones and clubs and axes and spears and swords and catapults and bowie-knives and flintlocks and Gatling guns and Bren guns and detonation bombs and fragmentation bombs and delayed-fuse bombs and butterfly bombs and V-1 and V-2 and V-1000. They all had courage—did have it—would have it. It was a terrible thing to admit, perhaps, but after enough years of killing-and-not-being-killed you got a little tired of courage. There was so damned much courage in the world, and so damned little wisdom ..."—J. R. ULLMAN, *The White Tower*, London, 1954; p. 375.

USE OF ISOTOPE-LABELLED RED CELLS TO DEMONSTRATE INCOMPATIBILITY IN VIVO

P. L. MOLLISON M.D. Camb., M.R.C.P.
MARIE CUTBUSH B.Sc. Melb.

From the Medical Research Council's Blood Transfusion Research Unit, Postgraduate Medical School of London

IN selecting blood for transfusion it may be difficult to decide whether a reaction occurring in vitro implies that red cells will be destroyed in vivo. For example, cross-matching may reveal the presence of a specific antibody strongly active at low temperatures but doubtfully active at 37°C; in other cases all blood samples may react weakly with the patient's serum at 37°C, suggesting the presence of a non-specific antibody. In such cases there is a real need for a biological test to supplement tests in vitro.

The earliest biological test introduced into transfusion work consisted simply in injecting a small volume of the donor's blood and looking for a clinical reaction. A later refinement consisted in injecting the donor's blood in amounts of about 50 ml. and looking for increases in bilirubin or for the presence of free hæmoglobin in the recipient's plasma (Wiener et al. 1942). However, this test is not very sensitive (see Mollison 1951). Compatibility can be reliably assessed only by measurement of the survival of the injected cells.

Until recently the survival of transfused cells could be measured only by differential agglutination. This method is practicable only when donor and recipient belong to different ABO or MN groups and when an injection of at least 50 ml. of the donor's blood can be made. However, by labelling red cells with radioactive isotopes it is possible to measure the survival of very small volumes of cells. In investigations reported here approximately 1 ml. of red cells were labelled either with the isotope ^{51}Cr or with ^{32}P. In addition to determining whether the red cells of prospective donors are compatible, this method provides a very useful means of discovering more about the action of blood-group antibodies in vivo.

Methods

Labelling of Red Cells

About 1 ml. quantities of red cells were labelled either with ^{32}P or with ^{51}Cr. The ^{32}P method was essentially that described by Reeve and Veall (1949) as modified by Chaplin (1954). The ^{51}Cr method was that described by Mollison and Veall (1955) using ^{51}Cr with a specific activity of 5–10 mC per mg.; the amount of Cr per millilitre of red cells was 2–10 μg.

When two samples of cells, one labelled with ^{51}Cr and the other with ^{32}P, were to be injected, either the suspensions were made up to 25 ml. separately or, more commonly, one sample of cells was added to the other and made up to a total volume of 25 ml. with sterile ice-cold saline solution. The cells were kept cold until the time of injection, and then 20 ml. of the suspension was injected from a calibrated syringe.

Expression of Results

In all the cases reported below (except cases 1 and 4) the red-cell volume was determined by injecting the subject's own red cells or other compatible red cells labelled with either ^{32}P or ^{51}Cr. From this determination the expected number of incompatible cells was calculated. In the figures reproduced below the numbers of surviving cells are expressed as percentages of the expected figure.

In cases 1 and 4, in which no compatible cells were injected, the red-cell volume was deduced from the number of incompatible cells at zero time, determined by extrapolating the slope of elimination to the time axis.

In calculating the survival of cells labelled with ^{32}P it was assumed that 1% of ^{32}P left the cells in each ten-minute period after the injection (Reeve and Veall 1949); survival was measured by this method only for periods not exceeding one hour.

In calculating the survival of cells labelled with ^{51}Cr no correction for loss of chromium was made during the first hour after injection, because it is known that the loss in so short a period is too small to be measurable. When the survival of ^{51}Cr-labelled cells was followed for periods exceeding one hour after injection, corrections for chromium elution were made from data published by Mollison and Veall (1955)—i.e., it was assumed that about 6% of Cr was lost during the first 24 hours after injection, and that thereafter Cr eluted from the red cells with a half-period of about 55 days.

Serological Tests

Unless otherwise specified, the antibody titres reported below refer to the results of indirect anti-globulin (Coombs) tests. Halving dilutions of the recipient's serum, taken immediately before the injection, were incubated with a sample of the cells used for injection. In cases 2–5 sensitisation took place only in the presence of complement; therefore fresh "neutral" serum was added to each tube of the titration. After incubation with the patient's serum the cells were tested with a range of dilutions of anti-globulin serum. The anti-globulin serum used was one which had previously been shown to contain anti-beta globulin as well as anti-gamma globulin (see Crawford et al. 1955).

Enzyme-treated cells were used for detecting Lewis antibodies (cases 2–4) and to demonstrate the characteristics of a serum containing anti-P (case 5). The enzyme ficin was used, and the tests were made according to directions supplied by Dr. R. E. Rosenfield:

> One drop of a 1% ficin solution (in Hendry's buffer of pH 7·4) was added to nine drops of a 2% suspension of red cells; after 15 minutes' incubation at 37°C the red cells were washed once in saline solution and resuspended to a 2% concentration in fresh saline solution. Two drops of the red cell suspension were mixed with two drops of the patient's serum; the mixture was examined for hæmolysis after one hour at 37°C.

In each case the patient's serum was also tested for its ability to agglutinate cells suspended in saline solution at room-temperature and at 37°C. In some cases, after the cells had settled in the tube, 20% albumin was substituted for the supernatant serum-saline mixture and half an hour later the deposit was examined microscopically for agglutinates (Dodge 1952).

Results

Great variations in the rate of destruction of red cells were observed when incompatible cells were injected; the destruction tended to follow certain definite patterns:

Elimination of Most of the Injected Cells within Ten Minutes

This pattern was observed after injecting Fy(a+) cells into case 1, whose serum contained anti-Fy^a, and was also observed after injecting Le(a+) cells into case 2, whose serum contained anti-Le^a.

Case 1.—A man, aged 48, suffering from hæmophilia, had been transfused many times, and his serum contained the blood-group antibodies anti-Fy^a and anti-Rh. During a period when he was in relatively good health and at work he was given small amounts of incompatible cells so that their survival could be studied. Fy(a+) Rh-negative cells from the same donor were injected on two occasions, being labelled with ^{51}Cr on the first occasion, and with ^{32}P on the second. As shown in fig. 1, essentially the same pattern of elimination was observed on both occasions—i.e., after a lag of two or three minutes the cells rapidly left the circulation; in the following five minutes 50% were removed, and after 20 minutes only 10% were left. The remainder were more slowly eliminated.

The two injections of Fy(a+) cells were given at an interval of two weeks; there appeared to be no immune response to

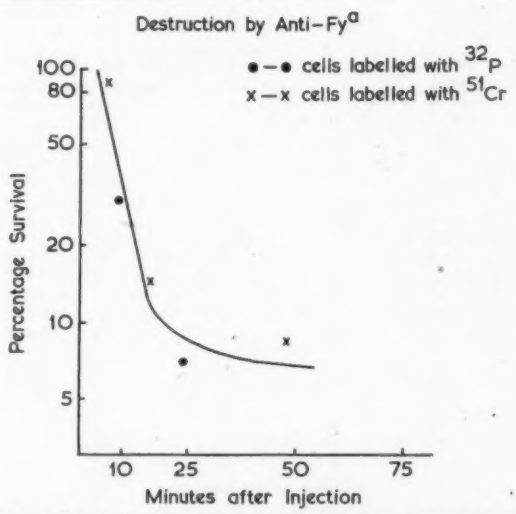


Fig. 1—Survival of Fy(a+) cells in case 1. The cells labelled with ^{32}P were injected two weeks after the cells labelled with ^{51}Cr; the same donor was used. The titre of anti-Fy^a was 1/8 on both occasions. The percentage survival is plotted on a logarithmic scale in this figure and in figs. 2–5 and 7.

the first injection, the titre of anti-Fy^a remaining at 1/8 throughout the period of the observations.

Case 2.—A man, aged 72, with subacute leukæmia received between May and July, 1954, blood from ten donors without reaction. In November, 1954, he was transfused with blood from two more donors (donors 11 and 12, see below). Four or five minutes after transfusion began he developed pain in the back, but this disappeared when the rate of the transfusion was slowed, and it did not reappear when the transfusion was speeded up. He was transfused with blood from four more donors (13, 14, 15, 16) during November without reaction, but on Dec. 1, after the transfusion of a further 250 ml. of blood (donor 17), he developed backache again, and the transfusion was discontinued. Shortly afterwards the patient passed urine containing hæmoglobin. Next day his serum was found to contain methæmalbumin, and his urine to contain methæmoglobin. During the next ten days he was transfused with five bottles of blood without incident.

On Dec. 16, 1 ml. of the fresh cells of donor 17, labelled with ^{51}Cr, was injected. The first sample, taken eight minutes after injection, contained only 20% of the expected count of cells. Further tests now showed that the patient's serum contained anti-Le^a and that donor 17 was Le(a+), as were donors 11 and 14.

A further test injection of Le(a+) cells (donor H. L.) was given when the anti-Le^a titre was 1/16; it was found that elimination was almost complete in ten minutes. When the numbers of surviving cells were plotted on a semi-logarithmic scale against time, it was observed that the points between about three and ten minutes fitted a straight line. This line, when extrapolated to 100% survival, crossed the time axis at about two and a half minutes, suggesting a short lag phase after injection (see fig. 2).

Le(a− b−) cells were relatively slowly eliminated—i.e., there was no significant change in their number during the few hours following injection. The survival of these cells was followed for two months, and it was found that their rate of elimination was only slightly greater than in normal recipients; it was presumed that the patient had a mild hæmolytic process, probably related to his leukæmia.

The patient's serum only weakly agglutinated Le(a+) cells. The antibody could be readily detected by the indirect anti-globulin test if the test was made in the presence of complement. The reactions were stronger when the patient's serum was incubated with cells at 37°C than when sensitisation was carried out at room-temperature. After being heated to 56°C for twenty minutes the patient's serum no longer sensitised Le(a+) cells; its sensitising power was restored by the addition of fresh normal serum (lacking Le^a substance).

The anti-globulin reaction in this case (and in cases 3–5) did not depend on anti-gamma globulin but on anti-beta globulin in the rabbit serum. For example, the reaction was not inhibited by the addition of gamma globulin but was inhibited by the addition of serum from a patient with agammaglobulinæmia (Crawford et al. 1955).

After treatment with ficin, Le(a+) cells were lysed by the patient's serum. Great variation was found among the reactions of Le(a+) cells from different donors; the cells could be classed as having "strong" or "weak" Lewis antigens, judged by their susceptibility to lysis and by their degree of sensitisation to an anti-globulin serum after exposure to the patient's serum. In comparative tests the cells of donor H. L. gave very weak reactions; nevertheless, as fig. 2 shows, they were very rapidly eliminated in this patient.

Rapid Elimination of a Proportion of the Injected Cells within Ten Minutes; Much Slower Elimination of the Remainder

This pattern was observed after injecting Le(a+) cells into cases 3 and 4, whose serum contained anti-Le^a. It was also observed after injecting P-positive cells into a patient with anti-P (case 5); in this case the elimination of the P-positive cells could not be prevented by warming the cells to 37°C before injection.

Case 3.—A woman, aged 19, had had severe hæmorrhage, requiring transfusion, at the time of parturition. She had never previously been transfused and had never been pregnant before; her present infant (at the age of two weeks) was Le(a−) and had no Le^a substance in its saliva. The patient received blood (about 2500 ml.) from five donors and was noticed to be jaundiced next day. However, the possibility that the jaundice was related to the administration of blood was not seriously considered until ten days later. It was then found that the patient's serum contained anti-Le^a (titre 1/8), and that one of the five donors was Le(a+).

This patient's serum had the same general characteristics as the serum of case 2 but reacted less strongly in vitro with Le(a+) cells than did the serum of case 2. Similarly, when test-injections of Le(a+) cells (donor H. L.) were given they were less rapidly eliminated, see fig. 2. During the ten minutes after the injection two-thirds of the cells were removed from the circulation; however, 20% of the cells were still present after 25 minutes, and no further decrease took place in the following 50 minutes. The cells had been labelled with ^{32}P, and their subsequent survival could not be estimated accurately; however, from the amount of ^{32}P present at 24 hours it was estimated that at least 10% of the cells were still present.

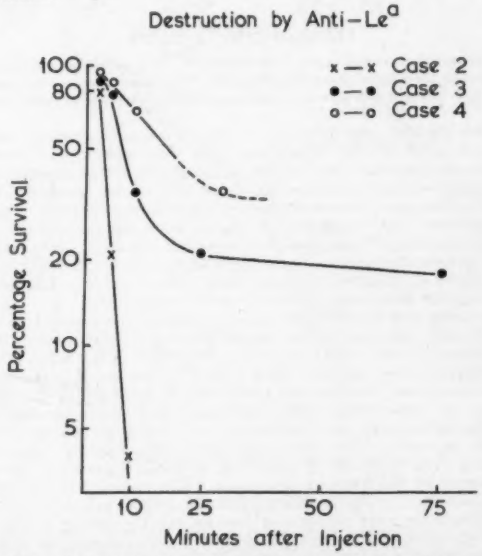


Fig. 2—Survival of Le(a+) cells from donor H. L. in cases 2–4. In case 4 the slope of elimination has been represented as flattening after 25 minutes because 27% of the cells were still present eight days later

Case 4.—A woman, aged 35, who had never been transfused, was found to have anti-Le^a in her serum during the course of her third pregnancy. Four years later her serum reacted well in vitro at 37°C with cells from donors with "strong" Lewis antigens but poorly with cells from donors (such as H. L.) with "weak" Lewis antigens. At this time, when the titre of anti-Le^a was 1/1, she was injected with labelled Le(a+) cells (from donor H. L. as used in cases 2 and 3). During the 30 minutes after injection 65% of the cells were removed from the circulation (see fig. 2); however, the remaining cells survived almost normally, with the result that three weeks after injection 23% of the total number injected were still present.

Case 5.—A man, aged 70, admitted to hospital for transurethral prostatectomy, had never previously been transfused. In the course of selecting blood to hold in reserve during operation the patient's serum was found to agglutinate all samples of blood with which it was tested at room-temperature. Further investigation showed that the patient's serum contained an auto-agglutinin acting weakly at room-temperature, and an anti-P agglutinin acting strongly at room-temperature. At 37°C the serum weakly agglutinated P-positive cells and caused partial lysis of ficin-treated P-positive cells. Fresh (but not heated) serum gave a weakly positive indirect anti-globulin reaction with P-positive cells (titre 1/2).

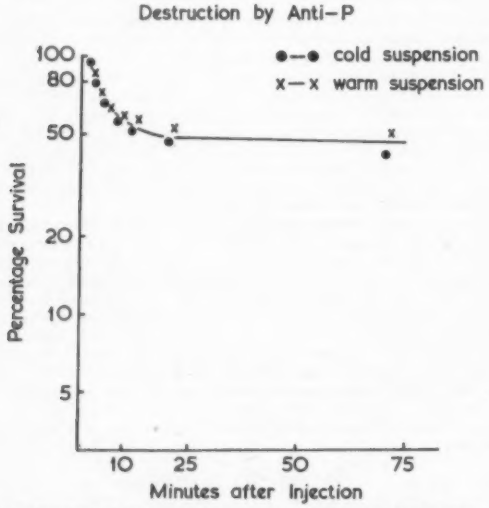


Fig. 3—Survival of P-positive cells in case 5. The cells injected as an ice-cold suspension were labelled with ^{32}P; those (from the same donor) injected as a warm suspension (39°C) were labelled with ^{51}Cr.

The patient was transfused with P-negative blood, and injections of labelled P-positive cells were given. On three separate occasions the pattern of elimination was essentially the same—namely, removal of about 50% of the injected cells in 10–15 minutes, followed by very much slower removal of the remainder. For example, on one occasion the percentage of cells surviving 70 minutes after injection was 51%. Next day the percentage survival was unchanged; after 9 days the number had fallen to 31%, and after 29 days to 17%. Labelled P-negative cells were found to survive normally.

To discover whether the temperature of the suspension of P-positive cells injected influenced their survival, the following experiment was made on two occasions. The cells of a P-positive donor were labelled with ^{32}P, suspended in ice-cold saline solution, and kept in a bath at 0°C until injected. Cells from the same donor were labelled with ^{51}Cr, suspended in warm saline solution, and kept in a bath at about 39°C until injected. The warm suspension was rapidly injected into a vein, followed by a few ml. of saline solution at 20°C, followed by the ice-cold suspension. The survival of the cells is illustrated in fig. 3. Note that the cells injected at body-temperature were eliminated just as rapidly during the first ten minutes as the cells injected as a cold suspension. The same donor was used on both occasions, and close agreement was found between the results of the two tests—e.g., 12 minutes after injection the results were as follows: "warm" cells 56% and 57%, and "cold" cells 53% and 52% on the two occasions.

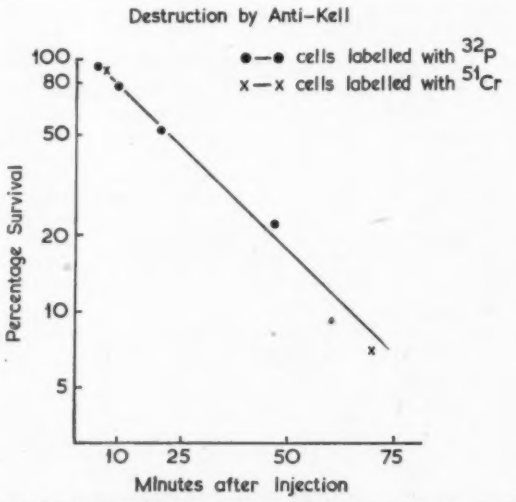


Fig. 4—Survival of Kell-positive cells in case 6. There was an interval of three days between the two injections; the titre of anti-Kell was the same on both occasions, and the cells of the same donor were used.

Constant Rate of Elimination with a Half-period of 20–30 Minutes

This mode of elimination was observed when Kell-positive cells were injected into case 6, whose serum contained anti-Kell. It was also observed when Rh-positive cells were injected into two patients whose serum contained anti-Rh; one of these patients (case 1) is described in this section; the other (case 7) is described in a later section because initially she showed a different pattern of elimination.

Case 6.—A woman with paroxysmal nocturnal hæmoglobinuria had been transfused many times, and her serum contained anti-Kell. The survival of Kell-positive cells is illustrated in fig. 4. Note that the number of surviving cells fitted a semilogarithmic plot; it appeared that there was a lag of about three minutes after injection before the cells

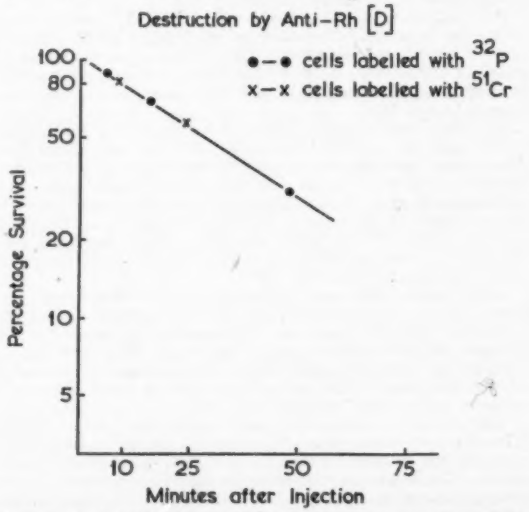


Fig. 5—Survival of Rh-positive cells in case 1. The injections were given at an interval of two weeks, using red cells from the same donor. On the first occasion the anti-Rh titre was 1/64; on the second occasion it was 1/2000.

started to disappear; thereafter 50% were removed in 20 minutes. Kell-positive cells were injected on two separate occasions, being labelled with ^{51}Cr the first time, and with ^{32}P the second time, three days later. The results on the two occasions were essentially the same, and the titre of anti-Kell remained at 1/16. On the first occasion the number of injected cells decreased steadily over the 70 minutes following injection, only 7% being left at that time. However, next day 3–4% were still present; three days later they had all gone. Kell-negative cells survived normally in this patient.

Case 1.—This was the patient already described above whose serum contained both anti-Fy^a and anti-Rh (—D). Rh positive (CDe/cDE), Fy(a—) cells were injected on two occasions, being labelled with ^{32}P the first time and with ^{51}Cr two weeks later. The titre of Rh antibody rose considerably after the first injection, being 1/64 at the time of the first injection and 1/2000 at the time of the second injection. Despite this the rate of elimination was no more rapid on the second occasion (see fig. 5). Note that the number of surviving cells, plotted on a logarithmic scale against time, fell upon a straight line; the time required for the removal of 50% of the cells was 28 minutes.

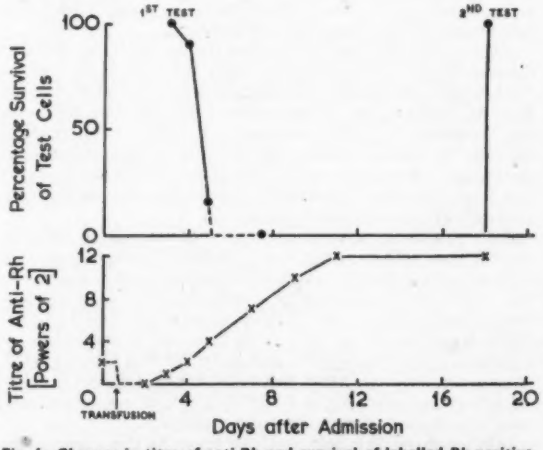


Fig. 6—Changes in titre of anti-Rh and survival of labelled Rh-positive cells during 18 days following the transfusion of Rh-positive blood in case 7. The Rh-positive (CDe/CDe) cells injected three days after transfusion, when the anti-Rh titre was 1/1, were eliminated relatively slowly (10% in 24 hours, 90% in two days). The cells (from the same donor) injected 18 days after transfusion, when the antibody titre was about 1/2000, were eliminated rapidly (half-period about 30 minutes).

Temporary Slowing of Rate of Elimination of Incompatible Cells, due to Adsorption of Antibody

After the transfusion of relatively large amounts of incompatible blood the antibody may all be adsorbed on to the incompatible cells. In these circumstances the rate of elimination of a further transfusion of incompatible cells may be relatively slow. If there is an immune response and the amount of antibody increases considerably, the incompatible cells may be rapidly eliminated, as in the following case.

Case 7.—A woman, aged 58, with carcinoma of the rectum and abdominal metastases, had been transfused with Rh-positive blood a year previously. During an emergency operation she was transfused with 500 ml. of Rh-positive blood under the impression that she was Rh-positive; a 30-minute cross-matching test in albumin had not revealed incompatibility. Further testing showed that the patient was Rh-negative and that her serum contained Rh antibody (indirect anti-globulin test). Three days later her blood still contained circulating Rh-positive red cells. This was demonstrated in two ways: (1) by showing that clumps of M cells were present, the donor being type M and the recipient type N; and (2) by showing that a small proportion of the patient's cells were strongly agglutinated by an anti-globulin serum. Three days after the transfusion of 500 ml. of Rh-positive blood there was very little free anti-Rh in the patient's serum (titre 1/1); a test injection of Rh-positive cells (CDe/CDe) was given. There was no change whatever in the count of the injected cells during the two and a half hours following the injection; next day 90% were still present, but on the following day only 14% were present (see fig. 6). A test made two days later showed no trace of surviving cells. This rapid decrease in the number of surviving cells coincided with the rapid increase in the amount of Rh antibody in the patient's serum. Fifteen days after the first test a second injection of Rh-positive cells from the same donor was given, when the titre of Rh antibody was very high (1/2000). The cells were rapidly eliminated, 50% being removed in about 30 minutes; the estimates fitted a semilogarithmic plot.

Constant Rate of Elimination with a Half-period of Several Days

In some instances the amount of antibody, or its character, appears to be inadequate to bring about the rapid elimination of incompatible cells. In the following case, despite the presence in the patient's serum of anti-c in a titre of 1/16, c-positive cells were eliminated relatively slowly (50% in 5–7 days).

Case 8.—A woman, aged 41, was admitted after having had a considerable hæmatemesis presumably from an acute gastric erosion. She had had three pregnancies; six months previously she had been transfused with blood from two donors. Preliminary matching-tests showed that her serum contained anti-c. She was transfused with blood from three Rh-positive donors without any untoward reaction, but rechecking showed that one of the donors was c-positive. Testing of the patient's blood eight hours after transfusion showed that most, or all, of these cells were present (positive direct anti-globulin test). The anti-c, which had been easily demonstrable in the patient's serum before transfusion (titre 1/16), was now extremely weak (titre 1/2). An injection of labelled c-positive cells (cde/cde) was given; the survival of these cells is illustrated in fig. 7. Note that for the first 14 days the numbers of surviving cells, when plotted on a semi-logarithmic scale against time, fall upon a straight line, 50% of the cells being eliminated in just over seven days. After 14 days the slope of elimination became a little steeper, perhaps because the patient had a mild immune response. There was no evidence of any further bleeding during the period of the observations.

Thirty-six days after she had received the transfusion of incompatible blood, and at a time when her circulation contained no trace of surviving c-positive cells, she was given a further test injection of c-positive cells from the same donor (cde/cde) whose cells had been injected previously. The survival of these cells is also shown in fig. 7. Note that

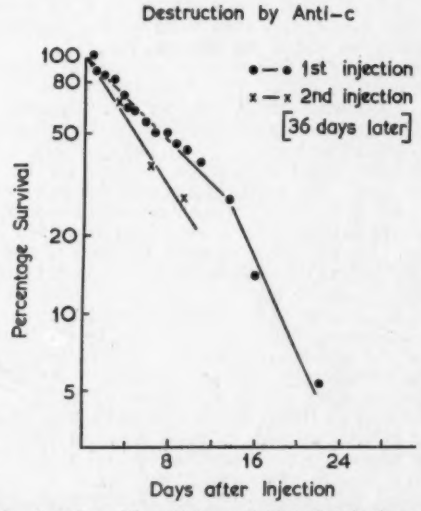


Fig. 7—Survival of c-positive cells in case 7. Note that the time scale is in days. The first injection of labelled cells was given 12 hours after the patient had been transfused with 500 ml. of c-positive blood. The second injection was given when all the transfused c-positive cells had been eliminated.

elimination was only slightly more rapid than on the first occasion, 50% of the cells being eliminated in about five days. The titre of anti-c at the time of the first injection was 1/2; at the time of the second injection it was 1/8–1/16.

Elimination Unaffected by Non-specific Cold Agglutinins

There is a good deal of evidence that when cold agglutinins, capable of reacting at room-temperature but incapable of reacting at 37°C, are present in the serum they do not influence the survival of transfused red cells. The following case provides further evidence.

Case 9.—A young man with acute leukæmia had been transfused eight times during the previous four months. His serum agglutinated all red cells except his own. However, the reactions took place only at room-temperature and not at 37°C. The indirect anti-globulin test was negative. The red cells of a donor whose cells were strongly agglutinated by the patient's serum at room-temperature were injected as a cold suspension; their survival was within normal limits for the three days during which it was followed.

Discussion

Radioactive phosphorus and radioactive chromium appear to be equally satisfactory red-cell labels for investigations lasting only an hour. However, ^{51}Cr is evidently more suitable if the survival of the red cells is to be followed longer. There is evidence that, provided the dose of chromium does not exceed about 25 μg. per ml. of red cells, their survival is unaffected (Donohue et al. 1955). In the present work the dosage never exceeded 10 μg. per ml. and was sometimes as low as 2 μg. per ml. of red cells. For this particular type of work it is evidently a great advantage to use ^{51}Cr of very high specific activity, such as that produced by the Szilard-Chalmers reaction (see Mollison and Veall 1955).

The present observations provide further evidence that, when ^{51}Cr-labelled red cells are broken down, the chromium is not re-utilised by other cells (Ebaugh et al. 1953). For example, in one case on the day following the injection of labelled incompatible cells no radioactivity was detected in a sample of red cells taken from the patient; the plasma contained about 1% of the injected radioactivity. When ^{32}P-labelled red cells were rapidly destroyed, a small fraction of the ^{32}P appeared to label other red cells, with the result that about 1–3% of the injected activity remained in the blood.

In all the cases described here the volume of incompatible cells injected was about 1 ml.; no untoward symptoms were noted, even when all the injected cells were destroyed within ten minutes.

There appear to be two main patterns of elimination of incompatible cells. The characteristics of the first type of elimination are as follows: after injection there is a brief lag-phase, lasting about two and a half minutes, before destruction begins. Then a large proportion of the cells undergo rapid destruction, presumably by intravascular lysis. The proportion of cells destroyed rapidly varies from 50 to 100%. Case 2 represents one extreme, 90% of the injected cells having been destroyed in five minutes. At the other extreme lie cases 4 and 5, in which 50% of the cells were destroyed in about 15 minutes and the remainder survived for three weeks or more (see table). It must be concluded that within a population of red cells susceptibility to destruction by the antibodies anti-Le^a and anti-P varies widely. Apparently, however, relative insensitivity may be overcome if the antibody is strong enough; this is well shown by fig. 2.

O'Brien et al. (1954) report in dogs findings which are similar in some respects to those reported here. Thus, in dogs whose serum contains canine anti-A, dog A_1 cells are very rapidly eliminated; but, when A_2 cells are transfused, only about 50% are rapidly destroyed, the remainder being slowly eliminated over one or two months.

In the second main pattern of destruction, illustrated in figs. 4 and 5, the red cells are removed from the circulation with a half-period of 20–30 minutes, and the points appear to fit a semilogarithmic plot. Dr. N. Veall (personal communication) suggests that this may represent the time required for half the cells to pass through the spleen. He points out that, if 3% of the circulating blood passes through the spleen each minute, and if the blood in passing is cleared completely of incompatible cells, it will take about 25 minutes to remove half the incompatible cells from the circulation.

When the Rh antibody titre is as high as 1/2000, destruction is no more rapid than when it is as low as 1/64 (case 1, see fig. 5). It must be supposed that, in this type of destruction of red cells, provided the red cells are "saturated" with antibody, the rate of elimination cannot be raised further by increasing the amount of antibody. However, when the titre of Rh antibody is low (e.g., 1/2) the red cells may be destroyed considerably more slowly, as in case 7 (see fig. 6).

The relatively slow destruction of c-positive cells in case 8 was rather surprising. Before the transfusion of 500 ml. of c-positive blood the titre of anti-c was 1/16; the slow elimination of the incompatible cells of this blood, and of the 1 ml. of labelled cells injected 12 hours later, was thought to be due to temporary absorption of antibody, the titre of free antibody having fallen to 1/2. However, 36 days after the transfusion, when the titre of anti-c had risen again to 1/16, 1 ml. of c-positive cells was eliminated almost equally slowly.

Although in this last patient (case 8) the elimination of incompatible cells was scarcely more rapid when 1 ml. was injected than when a whole bottle of blood was transfused, it would be unwise to conclude that the volume of injected cells normally has little influence on the rate of elimination. Indeed, experimental work in dogs has shown that, if two incompatible transfusions are given in succession, the second lot of red cells is less rapidly destroyed, evidently because the amount of antibody in the recipient's circulation has been reduced (Christian et al. 1951). In practice the fact that a small volume of incompatible cells may be more rapidly eliminated than a large volume does not impair the value of the test proposed here. The prime object of the test is to obtain evidence for or against the compatibility of the cells of a given donor, and for this it is only necessary to discover whether or not there is any departure from the normal rate of elimination.

When incompatibility is due to antibodies which are hæmolytic in vitro, it is to be expected that intravascular lysis will occur in vivo. Anti-Le^a and anti-P have been reported as being lytic in vitro (Andresen 1950, Rosenfield and Vogel 1951, Moureau 1945). The anti-Le^a and anti-P sera encountered in the present work would hæmolyse enzyme-treated cells but not untreated cells in vitro. In vivo, both these antibodies very rapidly eliminated a large proportion of the injected cells. In case 2 the transfusion of Le(a+) blood was followed by hæmoglobinuria, as in a previously reported case of "suspected incompatibility due to anti-Le^a" (Brendemoen and Aas 1952).

The very rapid elimination of labelled cells by anti-Fy^a was unexpected, although hæmoglobinuria has been

DESTRUCTION OF RED CELLS

Case no.	Specific antibody	Time taken for destruction of	
		50% of cells (min.)	90% of cells
1	anti-Fy^a	5	20 min.
2*	anti-Le^a	1¼	5 min.
3*	anti-Le^a	5½	More than 24 hr.
4*	anti-Le^a	16	More than 3 wk.
5	anti-P	15	More than 4 wk.

* The same donor (H. L.) was used in these three cases. The time taken for destruction was measured from a point 2½ minutes after injection (see text).

reported in a case of incompatibility due to this antibody (Wiener 1954).

If it is true that anti-Rh and anti-Kell normally cause extravascular destruction, as suggested by the present observations, it might seem that these antibodies should not cause hæmoglobinæmia. Intravascular hæmolysis has been reported after the transfusion of Rh-positive blood to patients with Rh antibody in their serum (Vogel et al. 1943) and after the transfusion of Kell-positive blood to a patient with anti-Kell (Young 1954). In these cases it must be supposed either that the antibody has become capable of bringing about intravascular hæmolysis or that, when extravascular destruction is very rapid, there is some spill-over of the hæmoglobin into the plasma.

In all the cases reported here in which injected red cells were destroyed at an increased rate the incompatibility could have been predicted from the results of the anti-globulin test—i.e., the patient's serum, at 37°C, sensitised the donor's cells to an anti-globulin serum. However, the reactions were much stronger with some anti-globulin sera than with others. This applied particularly to cells sensitised with anti-Le^a and anti-P. As reported here, these antibodies are not gamma globulins, and their detection depends on the presence of anti-beta globulin in the anti-globulin sera. Some anti-globulin sera contain relatively little anti-beta globulin and are unsuitable for detecting these particular blood-group antibodies (Crawford et al. 1955).

It should be emphasised that the presence of anti-Le^a and anti-P could be detected by the anti-globulin test only if the patient's fresh serum was used. It follows that in cross-matching tests, if a fresh sample of serum is not available, fresh normal serum should be added to the serum-cell mixtures. Plasma should not be used, anticoagulants being anticomplementary.

Dacie (1950) has shown that the incomplete cold antibody found in normal serum and the incomplete antibody found in the cold type of acquired hæmolytic anæmia are adsorbed on to red cells only in the presence of complement; moreover, red cells sensitised with these antibodies react with anti-globulin sera to which gamma globulin has been added. The present observations show that in these respects anti-Le^a and anti-P are similar.

Summary

The survival of transfused cells can be estimated by using volumes of cells as small as 1 ml. ^{32}P is suitable as a label when the survival is to be followed for an hour or so; but ^{51}Cr must be used when survival is to be followed for days or weeks.

When incompatible red cells were injected, their elimination followed one of two main patterns:

(1) In the first pattern 50–100% of the cells were destroyed within ten minutes; cells surviving at the end of this period were much more slowly destroyed. This pattern of elimination was seen when cells were injected into patients whose serum contained anti-Fy^a, anti-Le^a, or anti-P.

(2) In the second pattern the cells were eliminated at a steady rate, with a half-period of 20–30 minutes. This pattern was seen when cells were injected into patients whose serum contained anti-Rh or anti-Kell.

It is suggested that measurement of the rate of elimination of small volumes of injected red cells may be a useful biological test in cases in which the interpretation of compatibility tests in vitro is difficult.

In all cases in which red cells were rapidly destroyed in vivo the indirect anti-globulin test was positive in vitro. However, in cases where the serum contained anti-Le^a or anti-P the cells were sensitised only if incubated with fresh serum. Moreover in these cases it was shown that the reaction of the sensitised cells with anti-globulin serum depended not on anti-gamma globulin but upon anti-beta globulin. Some anti-globulin sera were unsuitable for the detection of these antibodies.

We are indebted to Dr. Eloise R. Giblett for her assistance in these investigations; Dr. J. V. Dacie and Dr. J. H. Crookston for calling our attention to many of these cases; Prof. J. McMichael, Dr. C. L. Cope, and Prof. J. M. Browne for permission to investigate patients under their care; Dr. J. D. James, Dr. P. B. Booth, and Dr. G. Plaut, of the North London Blood Transfusion Centre, for their help on numerous occasions in collecting blood from donors; and Dr. G. H. Grant for serum from a patient with agammaglobulinæmia.

REFERENCES

Andresen, P. H. (1950) Personal communication.
Brendemoen, O. J., Aas, K. (1952) *Acta med. scand.* **141**, 458.
Chaplin, H. jun. (1954) *J. Physiol.* **123**, 22.
Christian, R. M., Stewart, W. B., Yuile, C. L., Ervin, D. M., Young, L. E. (1951) *Blood*, **6**, 142.
Crawford, H., Cutbush, M., Mollison, P. L. (1955) *Brit. J. Hæmatol.* (in the press).
Dacie, J. V. (1950) *Nature, Lond.* **166**, 36.
Dodge, O. G. (1952) *J. clin. Path.* **5**, 102.
Donohue, D. M., Motulsky, A. G., Giblett, E. R., Pirzio-Biroli, G., Viranuvatti, V., Finch, C. A. (1955) *Brit. J. Hæmatol.* (in the press).
Ebaugh, F. G. jun., Emerson, C. P., Ross, J. F. (1953) *J. clin. Invest.* **32**, 1260.
Mollison, P. L. (1951) Blood Transfusion in Clinical Medicine. Oxford; p. 301.
— Veall, N. (1955) *Brit. J. Hæmatol.* **1**, 62.
Moureau, P. (1945) *Rev. belge Sci. Med.* **16**, 258.
O'Brien, W. A., Swisher, S. N., Young, L. E. (1954) *Trans. Ass. Amer. Phycns.* **67**, 124.
Reeve, E. B., Veall, N. (1949) *J. Physiol.* **108**, 12.
Rosenfield, R. E., Vogel, P. (1951) *Trans. N.Y. Acad. Sci.* **13**, 213.
Vogel, P., Rosenthal, N., Levine, P. (1943) *Amer. J. clin. Path.* **13**, 1.
Wiener, A. S. (1954) *N.Y. St. J. Med.* **54**, 3071.
— Silverman, I. J., Aronson, W. (1942) *Amer. J. clin. Path.* **12**, 241.
Young, L. E. (1954) *Amer. J. Med.* **16**, 878.

INCREASED EXCRETION OF ALDOSTERONE IMMEDIATELY AFTER OPERATION

J. G. LLAURADO

M.D. Barcelona

LECTURER IN EXPERIMENTAL SURGERY IN THE UNIVERSITY OF OTAGO, DUNEDIN, NEW ZEALAND

"The urine of man is one of the animal matters that have been the most examined by chemists, and of which the examination has at the same time furnished the most singular discoveries to chemistry, and the most useful application to physiology, as well as the art of healing" (De Fourcroy 1801).

IT is well known that surgical trauma is followed by a positive sodium balance and a negative potassium balance. Several hypotheses have been formulated (Wilkinson et al. 1950, Winfield et al. 1951, Schilling et al. 1953, Le Quesne 1953) to explain the increased excretion of K^+. Some workers have postulated that the adrenal cortex plays the chief rôle in this alteration of electrolyte metabolism, but hitherto evidence for this hypothesis has been lacking. In recent years several reports have been published of the occurrence of a sodium-retaining factor in some human urine, but neither the salt-conserving action of this factor nor indeed the rôle of the adrenal cortex in controlling electrolyte balance in healthy people can be explained by the activity of deoxycortone (Luetscher et al. 1952), which until recently was the only steroid known to possess such sodium-retaining properties in high degree. The discovery by Grundy et al. (1952) of a new hormone of the adrenal cortex, now called aldosterone, which has the ability to increase greatly both Na^+ retention and K^+ excretion by the kidney, the subsequent isolation of this hormone (Simpson et al. 1953), and the determination of its chemical structure (Simpson et al. 1954) have given a new impetus to the investigation of clinical disturbances associated with Na^+ retention and increased K^+ excretion.

In a previous paper (Cope and Llaurado 1954) it was reported that aldosterone (electrocortin) was present in large amounts in the urine of a patient suffering K^+ loss (Evans and Milne 1954). Since the communication by Conn (1954) it seems clear that the case was one of primary aldosteronism.

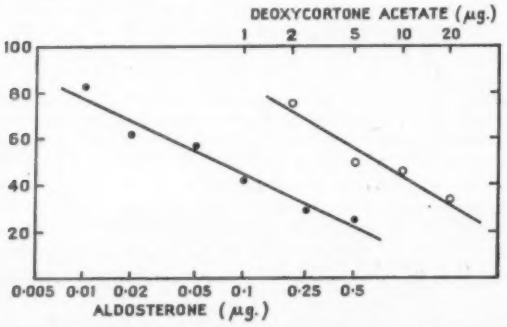


Fig. 1—Effect of aldosterone and deoxycortone acetate on Na^+/K^+ ratio percentage of control. Note linear relationship between log-dose and fall of Na^+/K^+ ratio percentage. Aldosterone proves to be 100 times as strong as deoxycortone.

In the light of these facts it seemed important to determine whether the well-known phenomenon of K^+ loss following surgical trauma could also be explained by increased secretion of the electrolyte-regulating corticoid (presumably aldosterone). In the work presented here a search was made for this corticoid in the urine of patients before and at various stages after surgical operation. This paper deals only with the results obtained before and immediately after operation. A brief preliminary account of the results has been published (Llaurado 1954).

Methods

The methods of extracting aldosterone from urine and of estimating it by bio-assay have been fully described previously (Cope and Llaurado 1954). The only difference introduced here is that ordinary Na^+ and K^+ have been used as loading injections to the rats, instead of radioactive $^{24}Na^+$ and $^{42}K^+$, since it has been statistically shown (Cope and Llaurado 1955) that the same degree of accuracy and sensitivity of the method can be reached by using non-radioactive materials. In the experiments reported here adult patients were chosen to include members of either sex with various clinical conditions and submitted to operations of various grades of severity. Twenty-four-hour samples of urine were collected without preservative, the first before operation, and the second during the twenty-four hours immediately after operation. When there was anuria for the twenty-four hours after operation, the next twenty-four-hour specimen was taken as immediate postoperative collection. No distinction was made between urine passed spontaneously by the patient and urine obtained by catheter.

For injections into rats the dry extract was dissolved in 20% ethanol in water, the volume being so chosen that the dose to be injected (three hours *) into each rat was contained in 0·1 ml. of solution.

The sodium and potassium were estimated in human urine in the aqueous phase of urine after extraction. This procedure was adopted because the small amount of urine passed by the postoperative patient in twenty-four hours made it advisable not to reduce the amount of urine before steroid extraction. Preliminary experiments showed that the amount of steroid solvent left in the urine does not produce any interference at the flame, the results being the same as those obtained with urine before any manipulation. An 'Eel' flame-photometer was used for all Na^+ and K^+ estimations.

Results

ASSAYS WITH CRYSTALLINE ALDOSTERONE

To obtain a standard of reference, bio-assays were made with known quantities of pure crystalline aldosterone, kindly made available by Prof. T. Reichstein of Basle. A linear relationship (fig. 1) was found between percentage of Na^+/K^+ ratio response and log-dose of aldosterone in a range from 0·01 μg. to 0·5 μg. Statistical data are tabulated in table I. The new steroid proved to be 100 times as active (fig. 1) as deoxycortone acetate (effective dose 2–20 μg.) when assayed by the same method, and this result is in complete agreement with the earlier data published by Simpson and Tait (1953).

Some workers (Desaulles et al. 1953, Swingle et al. 1954) have suggested that aldosterone differs both quantitatively and qualitatively from deoxycortone acetate in the way in which it acts on electrolyte metabolism. The present results, however, do not support this assertion, because the difference of slopes of regression lines of aldosterone and deoxycortone acetate do not differ significantly when analysed statistically, and favour the view that they are only quantitatively different.

Stability of Aldosterone in water-alcohol solutions.—Swingle et al. (1954) reported that aldosterone retains the same biological activity when kept in 95% ethanol solution. In the present experiments a solution of aldosterone in 20% ethanol in water retained complete biological activity after being kept six weeks in the refrigerator.

Recovery of aldosterone from human urine.—Aldosterone was added to pooled human urine, the usual method of extraction was used, and the results were compared with the same volume of analogous urine as a blank. An average recovery of 20% was obtained as estimated by its biological activity. This percentage of recovery is about the same as that obtained when a commercially available adrenal cortical extract ('Eucortone') was added to human urine and assayed by the same method (Cope and Llaurado 1954). Very similar values for aldosterone recovery are reported by Mills (1954).

TABLE I—PARAMETERS OF REGRESSION LINES OF ALDOSTERONE AND DEOXYCORTONE ASSAYS

Parameter	Aldosterone	Deoxycortone
Slope = | b |	32·95	39·30
S.D.L.*	4·69	5·59
S.E.$_b$†	3·26	7·55
$L = \frac{1}{\lambda} = \frac{\lvert b \rvert}{S.D.L.}$ ..	6·90	7·04
r (coefficient of correlation)	−0·98	−0·96
No. of rats used ..	68 (and 25 controls)	57 (and 43 controls)

* $S.D.L. = \sqrt{\frac{\Sigma (y - y\ calc.)^2}{N-2}}$ = standard deviation about the line.

† $S.E._b = \frac{S.D.L.}{\sqrt{\Sigma (x - \bar{x})^2}}$ = standard error of the slope.

$x = \log X$ (dose assayed).

ASSAYS WITH EXTRACTS OF URINE

Six patients have been studied so far. Some activity was found in the urine of some patients on the day before operation, but others showed none. From the point of view of adrenal cortex activity these patients before operation can be considered as "normal," and the finding of activity in these conditions agrees with previous results reported by Chart and Shipley (1953), Cope and Llaurado (1954), Luetscher et al. (1954), and Venning et al. (1954).

The extracts from urine obtained after operation invariably showed an increased sodium-retaining activity compared with the level before operation. The activity levels before and after operation are shown in table II. The difference between preoperative and postoperative activity is statistically highly significant ($P < 0.001$, determined by Student's t test).

Table II shows also the twenty-four-hour output expressed as microgrammes of aldosterone after operation, calculated from the regression line (fig. 1) and corrected for percentage of extraction recovery. The results range from 0·14 μg. to 2·70 μg. daily of aldosterone excretion with an average output of 1·11 μg. daily.

* A three-hour dose is one-eighth of the extract obtained from a twenty-four-hour specimen of urine.

TABLE II—COMPARATIVE DATA OF PATIENTS STUDIED BEFORE AND AFTER OPERATION

(Values under 100 indicate aldosterone activity in assayed urine)

Case no.	Sex	Diagnosis	Operation	Aldosterone activity *		24-hour output equivalent in µg. of aldosterone †		Volume of 24-hour urine (ml.)		Urine Na^+ (m.eq. per litre)		Urine K^+ (m.eq. per litre)	
				Pre-operative	Post-operative	Preop.	Postop.	Preop.	Postop.	Preop.	Postop.	Preop.	Postop.
1	F	Biliary lithiasis	Cholecystectomy	101·7 ±28·4	74·2 ±20·8	..	0·50	520	120	‡	‡	‡	‡
2	F	Inguinal hernia	Herniorrhaphy	113·0 ±30·4	76·5 ±24·1	..	0·43	980	190	‡	40·0	‡	200·0
3	M	Pulmonary tuberculosis	Thoracoplasty	78·8 ±21·6	52·5 ±12·7	0·36	2·28	1500	370	111·3	79·4	48·3	124·0
4	F	Pulmonary tuberculosis	Lobectomy	99·0 ±22·1	70·6 ±16·0	..	0·64	1820	240	30·4	23·0	19·6	82·0
5	M	(†) Lung cancer	Lobectomy	98·6 ±19·0	92·5 ±17·0	..	0·14	1380	275	50·0	46·0	25·0	110·4
6	M	Œsophageal cancer	Œsophagojejunostomy	77·0 ±18·2	50·1 ±11·3	0·41	2·70	970	780	54·0	10·0	55·0	104·0

* Mean ±standard error.—S.E. calculated as follows:

$$S.E. = \left[\frac{\frac{s_c}{\sqrt{n_c}} 100}{m_c} + \frac{\frac{s_\alpha}{\sqrt{n_\alpha}} 100}{m_\alpha} \right] \frac{\frac{100\, m_\alpha}{m_c}}{100}$$

where: s_c = S.D. of control set; s_α = S.D. of unknown set; $s = \sqrt{\frac{\Sigma (x-n)^2}{n}}$; n_c = no. of rats in control set; n_α = no. of rats in unknown set; m_c = mean of control set; m_α = mean of unknown set

† Calculated from regression line and corrected for percentage of extraction recovery—values corresponding to aldosterone activity over 95% have not been calculated.

‡ Not estimated.

The activity shown by the extracts was quite independent of the total twenty-four-hour volume of urine (table II), this fact confirming the observation reported by Luetscher and Johnson (1954).

It was also found that the urinary Na^+/K^+ ratio in patients before operation was greater than 1, but that after operation it was very much less than 1. If the values obtained in the bio-assay and the Na^+/K^+ ratio of the patient's urine are plotted in the same graph (fig. 2), the diagrams which result show remarkable similarity. Great importance is attached to this fact because the activity of the extract in the course of the bio-assay is assessed also in terms of Na^+/K^+ variation. The fact that an observation (Na^+/K^+ ratio in urine of the patient) made by a non-biological method correlates so well with the results of the bio-assay seems strongly to point to a relationship between both variables.

Discussion

Previous Clinical Data

That the adrenal cortex might play an important rôle in the disturbances of electrolytes following surgical trauma had been suggested earlier by Pearson and Eliel (1949), Elkinton and Tarail (1950), and Mach (1954).

An important contribution has been made by Moore and Ball (1952), who made several attempts to reproduce under experimental conditions in man the metabolic changes which appear after operation. A mock operation with perfect reproduction of operative diet, management, and ambulation, and with intentional lack of fear, pain, anæsthesia, tissue trauma, and adrenal discharge, was carried out, with the result that among biochemical features the nitrogen metabolism resembled the post-operative pattern, but there was a lack of a sharp K^+ loss in the first day following "operation." On the other hand, a Na^+ loss was present instead of the well-known feature of Na^+ retention. When corticotrophin was given to reproduce the postoperative manifestations, Moore and Ball observed: "the dose used here produced somewhat more 11-17 oxysteroid activity on the third and fourth postoperative day . . . , and less desoxy-like (salt conservation) on the first day." That corticotrophin does not increase aldosterone in the urine has also been shown by Cope and Llaurado (1954), Luetscher and Johnson (1954), and Venning et al. (1954).

A valuable and clear approach was made by Le Quesne (1953), who subdivided the manifest Na^+ retention after operation into two episodes called "early sodium retention" and "late sodium retention," the former being specifically accompanied by acute K^+ excretion. Le Quesne pointed out that these two phenomena can be explained by a release of two different hormones from the adrenal cortex, each of which causes retention of Na^+. Moore (1953) has also indicated the possibility of a dissociation between activity like that of Compounds E and F and deoxycortone-like (salt-retaining) activity.

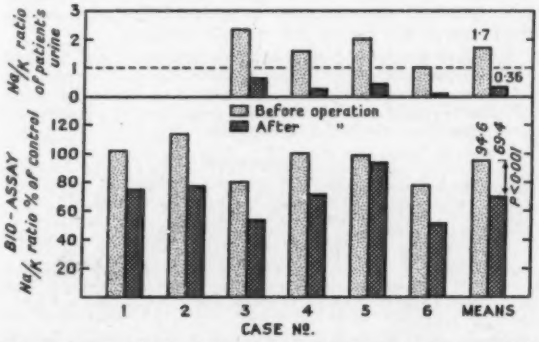


Fig. 2—Upper scale, Na^+/K^+ ratio of patient's urine before and after operation; lower scale, aldosterone activity of human urine before and after operation. Note correlation between scales.

Previous Biochemical Data

Several investigators had previously shown that there is an increased excretion of cortico-adrenal steroids after operation, but hitherto no evidence of salt-conserving activity in the urine of postoperative patients had been reported. Weil and Browne (1939, 1940) reported as a result of their experiments using the cold exposure test described by Selye and Schenker (1938) that urine of postoperative patients possesses material capable of protecting adrenalectomised rats against cold. Dorfman et al. (1942) found, also by the cold exposure test, increased adrenocortical material in extracts of urine of post-operative male patients. Venning et al. (1943, 1944) found in human postoperative urine substances able to protect adrenalectomised rats against lethal action of low temperatures, to maintain life and growth of adrenalectomised rats, and to induce deposition of glycogen in the livers of fasted adrenalectomised rats. Cope and Hurlock (1954) found by paper chromatography for separating steroids that a major operation, such as gastrectomy, causes a sharp rise in excretion of corticosteroids for several days. Franksson et al. (1953,

1954), by estimating the level of 17-hydroxycorticoids in the blood, have also shown that there is a large increase of them after surgery.

Although all these reports confirm the increased production and excretion of steroid materials after operation, it must be admitted that aldosterone by itself is not responsible for all these findings. Despite the remarkable biological activity of the urine of patients after operation, the average excretion in terms of aldosterone in the twenty-four hours following operation is only 1·11 μg., a quantity so minute in comparison with the postoperative daily total steroid output of 6·3 mg. (Cope and Hurlock 1954) that it is not surprising that variations in aldosterone excretion cannot yet be determined by chemical methods. Thus Mach et al. (1954) and Prunty et al. (1954) have observed that there was no increase in the excretion of 17-ketosteroids or of 11-17-hydroxycorticoids when aldosterone in a dosage of 100–1050 μg. daily was given to several patients. It is for this reason that resort must be had to bio-assay.

To sum up, it can be concluded that, although several previous workers have shown increased activity of the adrenal cortex after surgical trauma, this activity was almost certainly due to 11-17-oxycorticoids; and hitherto there has been no evidence of changes of excretion of "salt-conserving" hormone after operation. The results of the present experiments prove conclusively that a "sodium-retaining" factor is excreted immediatey after operation simultaneously with a large loss of K^+ and an inversion of the urinary Na^+/K^+ ratio. Since aldosterone has been chromatographically isolated (Cope and Llaurado 1954, Luetscher and Johnson 1954, Luetscher et al. 1954) in the urine of patients having similar disturbances in electrolyte excretion, it appears highly probable that the factor in question is aldosterone. Moreover increased excretion of this hormone after operation explains satisfactorily the sudden sharp inversion of electrolyte excretion forming part of the normal pattern of metabolic response to surgery.

Although Moore (1953) cautiously stated that increased excretion of corticoids after operation does not necessarily mean overproduction of them, since this increased elimination might be due to alterations in the liver metabolism of, or in the kidney threshold for, steroids, this appears unlikely for the following reasons:

(1) Prunty et al. (1954) have recovered aldosterone from human urine after its administration.

(2) The increased postoperative excretion of aldosterone accompanies the changes that theoretically would be expected from overproduction of this hormone, according to its biological activity—i.e., sharp K^+ excretion and sudden Na^+ retention. The administration of aldosterone reproduces the same pattern of electrolyte response (Na^+ retention and acute K^+ excretion) as after operation (Mach et al. 1954, Kekwick and Pawan 1954).

(3) There is a remarkable chronological relationship between the onset of the aldosterone effect and the metabolic changes following surgery, as reported independently: Mach et al. (1954), on the one hand, showed that the influence of aldosterone on electrolyte excretion is evident three to six hours after injection; and, on the other hand, it is well known from the earlier work of Blixenkrone-Møller (1949) that the sharp K^+ excretion following surgery begins within 6 hours after operation.

(4) The amount of aldosterone excreted bears no relation to the 24-hour volume of urine. If the cause of increased aldosterone excretion lay in the kidney, one would expect to find a relation between the total output of urine and the excretion of aldosterone, but there is none.

(5) Frankson and Gemzell (1953) and Frankson et al. (1954) have shown that there is a large increase of adrenocorticoids in the blood before the increased excretion in urine shown by other workers. This may be taken as indirect evidence that a high output of aldosterone in the urine indicates a high concentration of this hormone in the blood.

The detailed clinical observations of Moore and Ball (1952), Le Quesne (1953), and Moore (1953) have laid down the foundations for a thorough investigation by bio-assay of the adrenocorticoids participating in the metabolic response to surgery. Further research is still needed to elucidate the factor or factors responsible for "late sodium retention," to define the clinical implications, and to interpret the increased excretion of aldosterone immediately following surgery. Another promising field for investigation is the establishment of the factors or substances stimulating or governing the production of aldosterone, since corticotrophin is not its specific stimulus. Selye (1950) suggested that the somatotropic hormone might be a specific stimulant of "mineralo-corticoids," and Venning et al. (1954) have reported that, after administration of growth hormone, there is an increase in the Na^+-retaining factor present in the urine of normal individuals. If this finding is confirmed by other workers, this relationship between aldosterone and growth hormone would be extremely interesting.

In accordance with the new known facts about the regulation of electrolytes by the adrenal cortex it seems adequate to suggest that the terms "deoxycortone-like activity" and "mineralo-corticoids" should be abandoned, and the more logical and precise "aldosterone-like activity" and "aldosterone-like corticoids" substituted.

Apart from speculations it can be concluded that, whatever steroids may be involved in the late sodium retention, the sharp loss of K^+ following surgery is associated with increased production of an electrolyte-controlling adrenocorticoid, which there is good reason to believe is aldosterone, and that overproduction of this steroid forms part of the normal pattern of metabolic response to surgery.

Summary

By a bio-assay designed to detect aldosterone it has been shown that a sodium-retaining and potassium-excreting factor is present in the urine of patients after surgical operations.

Some patients excrete this factor before operation, but in all cases the excretion after operation is very much greater than before operation.

Evidence is adduced that this activity is due to aldosterone, the recently discovered electrolyte-regulating cortico-adrenal hormone.

The increased excretion of electrolyte-regulating corticoid is shown to accompany the sharp potassium loss and the early sodium retention which are common features of the normal response to surgery. Excretion levels of this corticoid correlate qualitatively with the Na^+/K^+ ratio in the urine of patients before and after operation.

Increased production of the electrolyte-regulating corticoid may be one of the factors responsible for the electrolyte changes in the immediate postoperative period.

The results of assays with pure crystalline aldosterone are also reported. This steroid is 100 times as strong as deoxycortone when assayed in terms of Na^+/K^+ urinary deviation in the rat by the present method.

I wish to thank Prof. M. F. A. Woodruff and Dr. C. L. Cope for their encouragement in this investigation and for criticism of the manuscript; Prof. T. Reichstein, of Basle, for a gift of pure crystalline aldosterone; and Mr. G. Spears for assistance with the statistical analysis.

REFERENCES

Blixenkrone-Møller, N. (1949) *Acta chir. scand.* **97**, 300.
Chart, J. J., Shipley, E. S. (1953) *J. clin. Invest.* **32**, 560.
Conn, J. W. (1954) *Brit. med. J.* ii, 1415.
Cope, C. L., Hurlock, B. (1954) *Clin. Sci.* **13**, 69.
— Llaurado, J. G. (1954) *Brit. med. J.* i, 1290.
— — (1955) *J. Endocrin.* (in the press).
De Fourcroy, A. F. (1801) Système des connaissances chimiques, et de leurs applications aux phénomènes de la nature et de l'art. Paris. (English translation by W. Nicholson, London. 1804.)
Desaulles, P., Tripod, J., Schuler, W. (1953) *Schweiz. med. Wschr.* **83**, 1088.
Dorfman, R. I., Horwitt, B. N., Fish, W. R. (1942) *Science*, **96**, 496.
Elkinton, J. R., Tarail, R. (1950) *Amer. J. Med.* **9**, 200.
Evans, B. M., Milne, M. D. (1954) *Brit. med. J.* ii, 1067.

References continued at foot of next column

A POSITIVE-NEGATIVE PRESSURE RESPIRATOR

G. T. SMITH-CLARKE
M.I.Mech.E., F.R.Ae.S.
CHAIRMAN OF THE HOSPITAL MANAGEMENT COMMITTEE, GROUP 20, BIRMINGHAM REGIONAL HOSPITAL BOARD

J. F. GALPINE
M.D. Leeds, M.R.C.P.E., D.P.H., D.C.H.
MEDICAL SUPERINTENDENT, WHITLEY HOSPITAL, COVENTRY, WARWICKSHIRE

ARTIFICIAL respiration by intermittent positive pressure (I.P.P.) may contribute to the development of shock by lowering cardiac output (Astrup et al. 1954). This is principally due to interference with venous return to the heart by raising the mean intrathoracic pressure. Maloney and Whittenberger (1951a) say that I.P.P. does not obstruct blood-flow through the pulmonary capillary bed any more than does a normal inspiration producing the same degree of inflation. In normal people receiving I.P.P. the venous gradient is rapidly re-established by a rise of systemic venous pressure; but this may not happen if the vasomotor responses are compromised (Maloney et al. 1953).

To avoid this danger in I.P.P. a method of giving adequate ventilation at an intrathoracic mean pressure approximating to atmospheric or even less is needed, and this is possible by using negative pressure in expiration—i.e., positive-negative pressure (P.N.P.). Without the use of negative pressure the mean pressure in I.P.P. can be minimised by making inspiration as rapid as is consistent with satisfactory ventilation, and by ensuring all possible freedom of expiration to allow a maximum of time for a pause after expiration at zero (i.e., atmospheric) level. Apart from considerations of this sort Maloney et al. (1953) state that the shape of the pressure curve is of little significance. The use of negative pressure does not seem to have any direct effect on the rate of emptying of the lungs (Asmussen 1955). Fear of using negative airway pressure—especially of causing pulmonary œdema is considered groundless by Maloney and Handford (1954).

Certain pressure respirators are fitted with negative-pressure devices on the Venturi principle. Price et al. (1954), studying some commercially available respirators, speak of the high resistance in Venturi devices but found that a manually operated P.N.P. apparatus with a negative pressure reservoir of large volume was capable of ventilating adequately at zero or negative mean mask pressure. After testing a respirator having a Venturi attachment we concluded that the latter was largely ineffective, probably because of swamping by the volume of positive pressure in the oncoming wave of expired air. In these circumstances a Venturi becomes a potential obstacle owing to its narrow aperture. In the new respirator the use of a pump ensures an adequate volume of negative pressure.

An interesting comparison has been made by Maloney and Whittenberger (1951b), who consider that alternating negative and positive pressure applied to the body in a tank respirator are the physiological equivalents respectively of positive and negative pressure applied to the airways by a P.N.P. respirator.

The usual type of pressure-operated inspiratory-expiratory valve (P.O. valve) used with an I.P.P. pump does not work satisfactorily with a negative pressure phase, and the best solution of this is a mechanically operated inspiratory-expiratory valve (M. valve) as in the present machine. This also abolishes any risk that the valve will stick, as may happen with a P.O. valve. A M. valve offers negligible resistance to expiration if accurately timed and will never vary. In contrast to this a P.O. valve must by definition have a resistance and is an inevitable (if small) obstacle to expiration; it will, moreover, open later in the cycle if the build-up of expiratory pressure is slowed by another resistance, thus tending to magnify the effect of, for example, a small-calibre endotracheal tube. Thus a M. valve offers definite advantages, at any rate if for use over long periods and in conjunction with a P.N.P. machine.

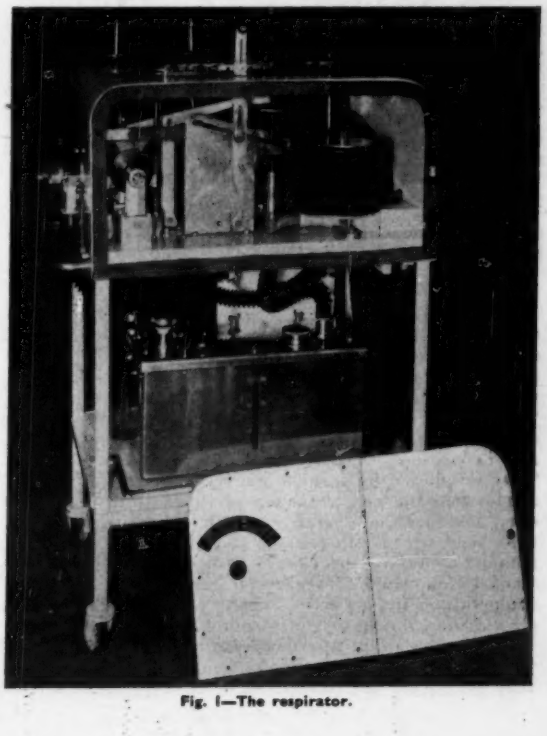


Fig. 1—The respirator.

DR. LLAURADO: REFERENCES—*continued*

Franksson, C., Gemzell, C. A. (1953) *Acta chir. scand.* **106**, 24.
— — von Euler, U. S. (1954) *J. clin. Endocrin.* **14**, 608.
Grundy, H. M., Simpson, S. A., Tait, J. F. (1952) *Nature, Lond.* **169**, 795.
Kekwick, A., Pawan, G. L. S. (1954) *Lancet*, ii, 162.
Le Quesne, L. P. (1953) *Ann. R. Coll. Surg. Engl.* **13**, 207.
Llaurado, J. G. (1954) *Proc. Univ. Otago med. Sch.* **32**, 20.
Luetscher, J. A. jun., Deming, Q. B., Johnson, B. B. (1952) *In* Wolstenholme, G. E. W., Cameron, M. P. Ciba Foundation Colloquia on Endocrinology. London: vol. iv.
— Johnson, B. B. (1954) *J. clin. Invest.* **33**, 276.
— — Axelrad, B. J., Cates, J. E., Sala, G. (1954) *J. clin. Endocrin.* **14**, 812.
Mach, R. S. (1954) *Schweiz. med. Wschr.* **84**, 113.
— Fabre, J., Duckert, A., Borth, R., Ducommun, P. (1954) *Ibid*, p. 407.
Mills, I. H. (1954) *Lancet*, ii, 814.
Moore, F. D. (1953) *Ann. Surg.* **137**, 289.
— Ball, M. R. (1952) The Metabolic Response to Surgery. Springfield, Ill.
Pearson, O. H., Eliel, L. P. (1949) *J. clin. Invest.* **28**, 803.
Prunty, F. T. G., McSwiney, R. R., Mills, I. H., Smith, M. A. (1954) *Lancet*, ii, 620.
Schilling, J. A., McCoord, A. B., Clausen, S. W., Whelan, T. J. jun., Kuykendall, S. J. (1953) *Surg. Gynec. Obstet.* **97**, 162.
Selye, H. (1950) The Physiology and Pathology of Exposure to Stress. Montreal.
— Schenker, V. (1938) *Proc. Soc. exp. Biol., N.Y.* **39**, 518.
Simpson, S. A., Tait, J. F. (1953) *Mem. Soc. Endocrin.* no. 2, 9.
— — Wettstein, A., Neher, R., von Euw, J., Reichstein, T. (1953) *Experientia*, **9**, 333.
— — — — — Schindler, O., Reichstein, T. (1954) *Ibid*, **10**, 132; *Helv. chim. Acta*, **37**, 1163, 1200.
Swingle, W. W., Maxwell, R., Ben, M., Baker, C., Le Brie, S. J., Eisler, M. (1954) *Proc. Soc. exp. Biol., N.Y.* **86**, 147.
Venning, E. H., Hoffman, M. M., Browne, J. S. L. (1943) *J. biol. Chem.* **148**, 455.
— — — (1944) *Endocrinology*, **35**, 49.
— Carballeira, A., Dyrenfurth, I. (1954) *J. clin. Endocrin.* **14**, 784.
Weil, P., Browne, J. S. L. (1939) *Science*, **90**, 445.
— — (1940) *J. clin. Invest.* **19**, 772.
Wilkinson, A. W., Billing, B. H., Nagy, G., Stewart, C. P. (1950) *Lancet*, ii, 135.
Winfield, J. M., Fox, C. L. jun., Mersheimer, W. L. (1951) *Ann. Surg.* **134**, 626.

The prototype respirator described below was wholly designed and constructed by one of us (G. T. S-C.).

Description of Machine

This respirator is designed to provide either P.N.P. or I.P.P. and to be reliable and efficient in both. The construction is simple and robust, and any person of average ability can learn from the instruction plate (to be fitted to each machine) all that is necessary for efficient use and maintenance. Apart from the driving motor and its switch no electronic apparatus is used. There is no interference with radio or television when the machine is working. It is essentially a hospital rather than a research apparatus.

The machine is built as a complete unit (fig. 1). It is mounted on castors and arranged in two tiers, the upper comprising the pumps, controls, driving motor, gearboxes, M. valve, and mechanism for manual operation. In an emergency the handle provided can be fitted on to the splined shaft at the front of the machine; it must be turned steadily at the required rate in the direction shown by the arrow. The lower tier carries the humidifier, negative-pressure vessel, and dry spirometer, and provides parking space for the handle for hand operation. The apparatus is of suitable height to stand alongside a standard hospital bed.

In addition to the motor switch, a "mains-on" indicator, and a compound pressure gauge, there are four controls on the top of the cabinet:

(1) The front transverse lever varies the stroke of the positive-pressure pump and controls the volume of air (or air-oxygen mixture) delivered. It is calibrated in 15 stages from 200 c.cm. to 1500 c.cm., representing air at atmospheric pressure pumped to the valve-box at each stroke. The minimal volume has been reduced to cater for the needs of children. A dead-weight safety-valve is provided to blow off at a pressure of 30 cm. water.

(2) The lever on the left controls the "dog-clutch" in the driving mechanism. This has two positions: the forward for emergency manual operation, and the rear for normal motor drive.

(3) The central lever to the rear controls the stepless speed variations and gives breathing-rates of 10–40 a minute. This is calibrated in 10 steps of 3 and can be locked at any of these points. This lever must not be moved when the machine is stopped. It can be used unlocked if thought necessary to adjust rate to a finer degree as the patient recovers.

(4) A circular knob on the right controls negative pressure, which is developed in a separate pump. If it is set to minimum (as when using I.P.P.) negative pressure is zero, and expiration takes place through a disc valve (of negligible resistance) placed on the top of the negative-pressure vessel. When the control is turned towards maximum (– 20 cm. water), the value can be read on the compound gauge, which measures pressures in the valve-box.

The Mechanical Inspiratory-expiratory Valve

We believe that this is the first mechanical respirator to be fitted with a M. valve. It is built into the side of the cabinet to reduce the length of tubing needed to reach the endotracheal-tube connection; this arrangement and the very small volume of the valve-box keep "dead space" to a minimum. The valve mechanism comprises two stainless-steel poppet valves (inspiratory and expiratory) working in a housing of hard bronze. They are closed by springs and operated by cams as in automobile and aero engines and timed so as not to be open together, however fractionally. Modern valves of this type are reliable over long periods even when running at dull-red heat and speeds of over 4000 revolutions a minute. In the respirator working at room-temperature and at speeds about 15–20 a minute they should work indefinitely with minimal attention.

The valve cams are designed to give a breathing pattern of inspiration 1, expiration 2. Since the inspiration period is 120° compared with a pressure stroke

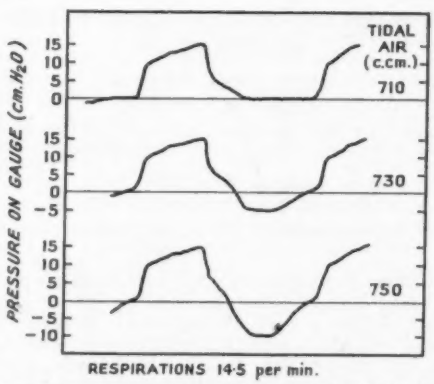


Fig. 2—Pressure curves, close to tracheal tube, recorded by Dr. Spalding during a clinical test of the respirator.

period of 180°, pressure is built up before the inspiratory valve opens. This helps to overcome the inertia of the air in the humidifier and tubing and makes possible a "zero" period at the end of expiration when I.P.P. alone is in use. If desired, the connections can be arranged to have the dry spirometer continuously in circuit; this is not detrimental to the breathing pattern if negative pressure is adjusted to compensate for the slight additional resistance to expiration.

The machine has been thoroughly tested with the aid of an "artificial lung" (Galpine and Smith-Clarke 1955) which for this purpose was modified to record a negative as well as a positive pressure/volume curve. We are indebted to Dr. W. Ritchie Russell and Dr. J. M. K. Spalding (Oxford), who tested the machine by using it to ventilate a tracheotomised adult female patient continuously for five days (fig. 2). Apart from some minor suggestions they considered "the design and performance to be most promising."

REFERENCES

Asmussen, E. (1955) Proceedings of the Third Congress of the Scandinavian Society of Anæsthesiologists, p. 22.
Astrup, P., Götzsche, H., Neukirch, F. (1954) *Brit. med. J.* i, 780.
Galpine, J. F., Smith-Clarke, G. T. (1955) *Lancet*, i, 722.
Maloney, J. V. jun., Elam, J. O., Handford, S. W., Balla, G. A., Eastwood, D. W., Brown, E. S. (1953) *J. Amer. med. Ass.* **152**, 212.
— Handford, S. W. (1954) *J. appl. Physiol.* **6**, 453.
— Whittenberger, J. L. (1951a) *Fed. Proc.* **10**, 88.
— — (1951b) *Amer. J. med. Sci.* **221**, 425.
Price, H. L., Conner, E. H., Dripps, R. D. (1954) *J. appl. Physiol.* **6**, 517.

FATAL HYPOGLYCÆMIA IN EARLY NON-ICTERIC INFECTIVE HEPATITIS

B. E. TOMLINSON
M.B. Lond., M.R.C.P.
PATHOLOGIST, GENERAL HOSPITAL, NEWCASTLE UPON TYNE

HYPOGLYCÆMIA due to liver disease was originally described by Nadler and Wolfer (1929) in a case of primary liver-cell carcinoma. Conn (1940, 1947) has reviewed spontaneous hypoglycæmia and described the liver disorders with which it may be associated.

Hypoglycæmia in fulminant infective hepatitis is not uncommon. Of 178 cases analysed by Lucké and Mallory (1946) a blood-sugar level lower than 30 mg. per 100 ml. was recorded in 16. All these cases, however, showed massive destruction of liver cells, and the clinical diagnosis of severe liver disease was never in doubt.

Death in the early stages of infective hepatitis is probably rare. In the present case death took place in hypoglycæmic coma after a short illness and before the

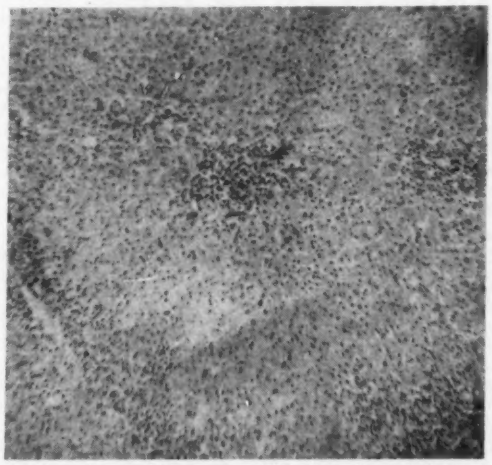


Fig. 1—Liver showing inflammatory infiltration of portal tract. (van Gieson. ×65.)

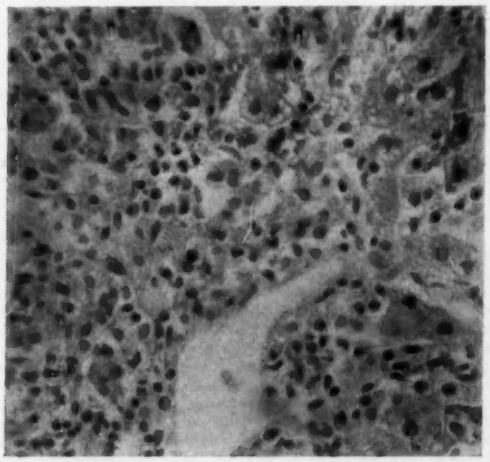


Fig. 2—Portal tract with cellular infiltration and vacuolated peripheral liver cells. (Hæmatoxylin and eosin. ×270.)

onset of jaundice; and, although the liver histology resembled in most respects the findings in early mild infective hepatitis, the diagnosis could not have been made with certainty but for the subsequent development of jaundice in other members of the patient's family.

Case-report

A girl, aged 6 years, was well and attending school until Nov. 15, 1953, when she developed a slight cough. On Nov. 19 she had a sudden attack of vomiting and was sick about a dozen times. She vomited throughout the night but remained active and with no disturbance of consciousness. At 7 A.M. on Nov. 20 she fell asleep. She called out several times during the first hour and vomited once but then fell into what her mother regarded as a deep sleep. She was possibly unconscious from that time.

On admission to hospital at 3 P.M. on Nov. 20 she was deeply unconscious, and ashy pale, and could not be roused. She had bitten her tongue. Every 30 seconds or so she had a short spasm of generalised twitching. Her respirations were slightly irregular and jerky. No abnormal physical signs were elicited except that her muscle tone varied from minute to minute. Her temperature was 97·4°F, pulse-rate 102, and blood-pressure 108/60 mm. Hg. Investigations performed immediately showed Hb 13·2 g. per 100 ml., white cells 22,000 per c.mm., serum-sodium level 320 mg. per 100 ml., serum-chloride level 575 mg. per 100 ml., serum-potassium level 31 mg. per 100 ml., alkali reserve 48·7 vol. %, blood-urea level 64 mg. per 100 ml., and blood-sugar level 15 mg. per 100 ml. Lumbar puncture produced clear cerebrospinal fluid under normal pressure with 6 lymphocytes per c.mm.

Death took place within two hours of admission.

Necropsy findings eighteen hours after death were as follows. The *liver* weighed 610 g. and was extremely pale. Its cut surface showed yellowish grey liver lobules of normal size, each accentuated by a narrow peripheral margin of reddish brown tissue. The *spleen* was moderately enlarged (80 g.) but otherwise showed no abnormality. Numerous soft lymph-nodes, measuring 0·5–1·5 cm. across, were present throughout the mesentery of the small intestine. The largest node was over the head of the pancreas. A few petechial hæmorrhages were present beneath the pleura and in the epicardium at the base of the heart.

Histology.—There was a uniform infiltration of the portal tracts of the *liver* with lymphocytes, a fair number of mono-nuclears of reticulo-endothelial type, a few plasma cells, and eosinophils. This infiltration involved the periphery of the liver lobules, and in a few places was continuous with the infiltration of neighbouring portal tracts (fig. 1). A few small foci of similar cells were scattered in other portions of the

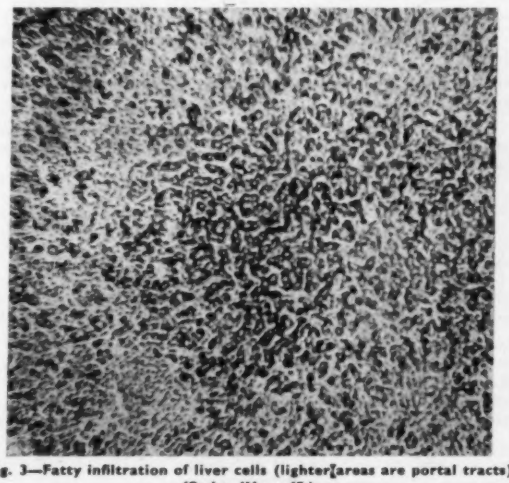


Fig. 3—Fatty infiltration of liver cells (lighter areas are portal tracts). (Sudan IV. ×65.)

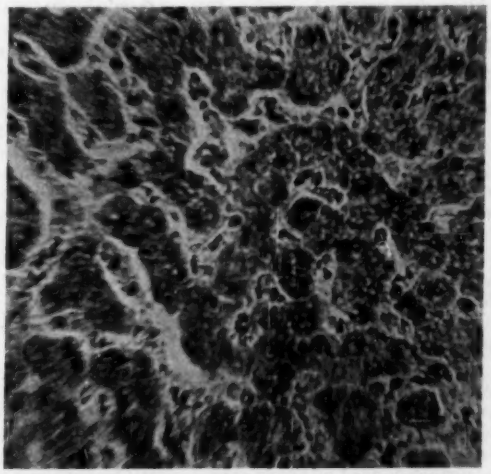


Fig. 4—Intense fatty infiltration of liver cells. (Sudan. ×270.)

liver lobules. The peripheral sinusoids were congested, producing the red rims of the lobules already mentioned. The liver cells showed diffuse and very fine vacuolation when stained with hæmatoxylin and eosin, only easily detected at the periphery of the lobules (fig. 2). Staining for fat revealed an extreme degree of fine fatty infiltration of all the liver cells (figs. 3 and 4), the severity of which was quite unexpected from the appearances of the hæmatoxylin and eosin sections. In alcohol-fixed material no glycogen was demonstrated. Although all the liver cells appeared equally affected by the fatty infiltration, the related ischæmia of the centre of the lobules and slight irregularity of the liver-cell cords suggested considerable swelling of the central cells and individual cells in other parts. No evidence of centrilobular necrosis was found. Reticulum stains showed no condensation around the central vein or elsewhere. Occasional liver cells scattered throughout the lobules showed an intense eosinophilic degeneration accompanied by shrinking of the cells and rounding of the cell borders. The nuclei of such cells were small and pyknotic. A few liver cells in mitosis were seen and an occasional doubly-nucleated cell. There was diffuse lymphocitic hyperplasia in the mesenteric lymph-nodes. The large node over the pancreas was œdematous, with dilated sinusoids which had prominent lining cells and contained polymorphs and plasma cells. The *spleen* was congested, with enlarged germinal centres, some showing cellular degeneration. Many sinusoids contained considerable numbers of polymorphs. The *kidneys* were congested, and there was a fairly well marked fine fatty infiltration of the proximal convoluted tubules, with a few foci of necrosis in these tubules and the thick loops of Henle.

Subsequent Family History

Several days after this child's death her sister, aged 5 years, had a slight illness with vomiting, and a fortnight later she became jaundiced for several days, after which she rapidly recovered. Five weeks later the dead child's twin brother became jaundiced but was only slightly ill. A few days later the mother became jaundiced, but again the illness was mild and of short duration. The illness of the second twin was witnessed by the general practitioner, who diagnosed infective hepatitis.

Discussion

That the liver lesion was due to infective hepatitis is probable histologically and virtually certain in view of the subsequent family history.

The liver changes in infective hepatitis have been extensively investigated since the publication of the aspiration biopsy studies of Roholm and Iversen (1939). Fatal cases show at necropsy almost complete destruction of liver cells (Lucké 1944, Lucké and Mallory 1946), and in many non-fatal infections necrosis, particularly centrilobular, is well marked (Dible et al. 1943). In the mildest instances, however, this rather characteristic centrilobular necrosis may be entirely absent, and the cellular degeneration limited to solitary cells showing distinctive eosinophilic change at any point in the lobule (Mallory 1947, Keller et al. 1951). Lobular disarray, due to swelling and shrinking of liver cells, and evidence of regeneration of liver cells (mitotic figures and multinucleated cells) are often seen. Bile thrombi are usually absent in the preicteric phase. Even the mildest cases show severe portal infiltration, mostly with lymphocytes, reticulo-endothelial cells, plasma cells, and eosinophils.

The histological appearances of the liver in the present case are therefore, except for the fatty infiltration, identical with the changes found in mild infective hepatitis, as are also the lesions in the spleen, lymph-nodes, and kidneys.

Fatty infiltration of the liver is unusual in infective hepatitis, particularly in the early stages (Weinbren 1952). Its severity and death in hypoglycæmia in the present case initially raised the question of poisoning, particularly by phosphorus or by mushrooms. Detailed inquiries revealed no likely source of accidental consumption of any known liver toxin, and all the meals for several weeks had been taken by the rest of the family, with the patient's twin eating identical food.

The possibility that the fatty liver and hypoglycæmia resulted from malnutrition, with or without an ingested toxic agent, and that the illness was similar to the fatty-liver disease which occurs in the British West Indies (Waterlow 1948) did not bear examination. The child was well nourished, as were the rest of the family, had no dietetic idiosyncrasies, and, apart from fairly frequent colds, was normal and healthy. The illness did, however, resemble very strikingly the rapidly fatal form of "vomiting sickness" (Chambers 1953, Jelliffe and Stuart 1954), some cases of which terminate in hypoglycæmia.

No explanation is available for the extensive fatty infiltration in the present case. Death took place too rapidly for it to have been the result of the severe vomiting. The appearances could result from infective hepatitis developing in a liver already the site of severe fatty infiltration. To support this there would need to be evidence of some other factor likely to produce fatty infiltration. No such evidence was found clinically or at necropsy. That the fatty infiltration could be an unusual response of the liver to a mild attack of infective hepatitis cannot be denied but seems unlikely in the absence of even minor degrees of fatty change in the average case. It seems rather more possible that the extensive fatty infiltration was a prenecrotic change in a severe hepatitis in which the development of extensive necrosis was forestalled by death in hypoglycæmia. This is pure speculation, for we have no knowledge of the early changes in the fulminant cases, and the development of necrosis and autolysis eliminates the possibility of demonstrating any pre-existing fatty infiltration.

This child died before intravenous therapy could be started, and it is impossible to know whether the coma was reversible. Jelliffe and Stuart (1954) record recovery from hypoglycæmic coma of short duration in vomiting sickness, but two patients who were in coma for more than seven hours died despite intensive therapy. Treatment in such cases is obviously a matter of the greatest urgency, and only by keeping hypoglycæmia in mind as an occasional cause of sudden coma will any chance of recovery be possible.

Summary

Fatal hypoglycæmia developed in the preicteric stage of infective hepatitis, being presumably related to severe fatty infiltration of the liver, a most unusual finding in this disease.

Possibly this fatty infiltration represents a prenecrotic change in the liver cells in a case which otherwise presented the histological features of a mild hepatitis.

I wish to thank Dr. G. Davison for permission to publish; Dr. J. Miller, the general practitioner; and Mr. A. Hall for the microphotographs.

REFERENCES

Chambers, H. D. (1953) *W. Ind. med. J.* **2**, 37.
Conn, J. W. (1940) *J. Amer. med. Ass.* **115**, 1669.
— (1947) *Ibid*, **134**, 130.
Dible, J. H., McMichael, J., Sherlock, S. P. V. (1943) *Lancet*, ii, 402.
Jelliffe, D. B., Stuart, K. L. (1954) *Brit. med. J.* i, 75.
Keller, T. C., Giges, B., Smetana, H. F. (1951) *Milit. Surg.* **109**, 425.
Lucké, B. (1944) *Amer. J. Path.* **20**, 471.
— Mallory, T. (1946) *Ibid*, **22**, 867.
Mallory, T. B. (1947) *J. Amer. med. Ass.* **134**, 655.
Nadler, W. H., Wolfer, J. A. (1929) *Arch. intern. Med.* **44**, 700.
Roholm, K., Iversen, P. (1939) *Acta path. microbiol. scand.* **16**, 427.
Waterlow, J. C. (1948) *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 263.
Weinbren, K. (1952) *J. Path. Bact.* **64**, 395.

NUTRITION AND FLUID AND ELECTROLYTE BALANCE DURING TREATMENT OF TETANUS

G. WILSON
M.B. Leeds., F.R.C.S.
REGISTRAR IN GENITO-URINARY SURGERY, THE GENERAL INFIRMARY AND ST. JAMES'S HOSPITAL, LEEDS

A. D. CARE
M.A. Camb., Ph.D. Leeds
RESEARCH FELLOW IN UROLOGY IN THE UNIVERSITY OF LEEDS

A BOY, aged 15, was admitted with a severe degree of tetanus and kept unconscious for fourteen days with nitrous oxide administered through a tracheotomy tube. Convulsions were controlled with a continuous intravenous infusion of suxamethonium chloride (J. J. L. Ablett 1954, personal communication).

It was thought that the anæsthesia might have to be continued for three weeks, and that therefore artificial feeding and a fairly strict check on fluid and electrolyte balance would be necessary. Few details of nutrition and of the administration of fluids in such cases have been published (Forrester 1954, Honey et al. 1954, Lassen et al. 1954, Shackleton 1954). The need for adequate nourishment is obvious, but careful control of the fluid and electrolyte balance is of paramount importance because the control of convulsions with a continuous infusion of suxamethonium chloride may necessitate the intravenous administration of several litres of fluid daily.

Nutrition

No details of the patient's height and weight had been recorded, but it was estimated that his basal metabolic requirements would be about 1500 calories per 24 hr. because he was to be kept at complete rest by the administration of relaxants. About 900 ml. of the following concentrated gruel was given, by stomach-tube, in four divided doses a day, the tube being removed after each feed:

1½ pints of fresh milk 2 eggs 4½ oz. glucose 1 oz. 'Casilan' 2 oz. dried milk 1 teaspoonful 'Marmite' 1 tablet (100 mg.) ascorbic acid ½ teaspoonful salt	Carbohydrate 208 g. Protein 87 g. Fat 50 g.

The total calorific value was about 1500 calories and the electrolyte content was as follows:

Sodium	125·0 m.eq. per litre
Potassium	52·4 " " "
Chloride	134·0 " " "
Calcium	100·0 " " "

The concentrated feed, together with the intravenous fluids administered (see below), gave the patient a daily intake of 1800–2100 calories.

No regurgitation developed, but, with this complication in mind, the provision of more frequent and smaller feeds and the intravenous administration of 20% glucose were considered as alternatives to the routine adopted.

Fluid and Electrolytes

Since the water content of the concentrated stomach feed was less than 1 litre, intravenous fluids were given to supplement this. In calculating the amount of fluid required the following factors were taken into account: (1) insensible losses via skin and lungs (about 1000 ml. per 24 hr.); (2) output of urine (1000 ml.); and (3) excessive losses due to anæsthesia, artificial respiration, and sweating, which was at times profuse.

It was decided that the fluid to be administered should contain sufficient electrolytes to cover normal losses, and should be so composed that, if the anæsthetist wished, an extra 1–2 litres of fluid could be given without danger of overhydration.

The solution chosen for intravenous infusion was Howarth's (1954) solution C:

Glucose	33 g.	approx. 135	calories	
NaCl	3 g.	51·2	m.eq. of Na	+ 70·3 m.eq. of Cl
KCl	1 g.	13·4	" " K	
$CaCl_2$	0·2 g.	3·6	" " Ca	
$MgCl_2$	0·1 g.	2·1	" " Mg.	
Aqua ad	1000 ml.			

From 2 to 4 litres was administered per 24 hours. Together with the stomach feeds, this gave a total fluid intake of 3–5 litres a day. On this régime the daily output of urine was 1500–3800 ml.

The intravenous fluid was administered through an indwelling polyethylene tube, so that the patient could be turned frequently without difficulty. No major complication developed from the use of such a tube, but minor accidents necessitated a change in the site of the drip on three occasions.

Collection of Urine Specimens

The patient developed an automatic bladder which emptied whenever he was turned in bed. Catheterisation was therefore unnecessary, and little difficulty was experienced in collecting the urine specimens.

Discussion

Nutrition

When the patient was weighed about three weeks after admission he scaled 94 lb., and ten days later he had increased to 102 lb. He had therefore probably lost during his illness well over 14 lb. despite what was considered to be a reasonable intake of nourishment, which included 87 g. of protein.

A possible explanation for this loss of weight might be that the patient was in negative nitrogen balance. If this were so, alternative mechanisms may be postulated:

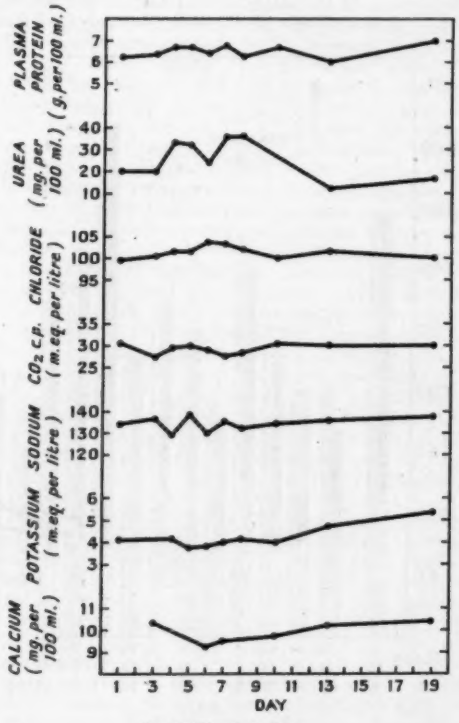


Fig. 1—Blood analyses.

CORRELATION BETWEEN INTAKE AND URINARY EXCRETION OF SODIUM, CHLORIDE, POTASSIUM, AND CALCIUM IONS

Day no.	Fluids (ml.)			Na (m.eq.)			Cl. (m.eq.)			K (m.eq.)			Ca (m.eq.)		
	Total intake	Urinary output	Diff.	Total intake	Urinary output	Diff.	Total intake	Urinary output	Diff.	Total intake	Urinary output	Diff.	Total intake	Urinary output	Diff.
1	2690	3850	−1160	186	234	−48	230	345	−115	63	109	−46	76	25	51
2	3660	—	—	232	—	—	295	—	—	75	—	—	77	—	—
3	4300	2580	1720	282	91	191	356	205	151	93	78	15	102	—	—
4	5200	2690	2510	350	103	247	437	200	237	117	86	31	134	14	20
5	4400	2200	2200	387	147	240	363	231	132	94	77	17	103	28	75
6	2900	2990	−90	212	224	−12	259	290	−31	74	74	0	97	26	71
7	3900	1660	2240	262	118	144	328	191	137	87	67	20	101	—	—
8	3300	2250	1050	210	172	38	267	241	26	67	77	−10	70	22	48
9	4200	2370	1830	300	192	108	368	258	110	103	80	23	131	24	107
10	3900	2270	1630	262	137	125	328	239	89	87	90	−3	101	24	77
11	3900	3680	220	262	346	−84	328	380	−52	87	72	15	101	34	67
12	5900	2698	3202	325	216	109	425	259	166	98	80	18	78	23	55

(1) The administration of the anæsthetic, or the disease process per se, may have led to excessive breakdown of protein, possibly brought about by an increase in adrenocortical activity.

(2) Prolonged muscular paralysis produced by the administration of relaxants may cause rapid loss of muscle comparable to that which follows denervation.

Where there is a substantial breakdown of tissue, however, it is customary to find a concomitant negative potassium balance (Gamble et al. 1923), of which there was no evidence in this patient (see below). Nevertheless it is felt that full balance studies would be well worth while in similar cases.

Blood Analyses

Throughout twenty days, during which blood analyses were frequently performed, no gross deviation from the normal took place (fig. 1) despite the fact that there was profuse sweating from time to time and that, during the transitional period from artificial to natural feeding, the patient had watery diarrhœa lasting three days.

Urine Analyses

The results of the daily urine analysis are set out in fig. 2. Approximate fluid and electrolyte balances were obtained by correlating total intake and urinary excretion (see table).

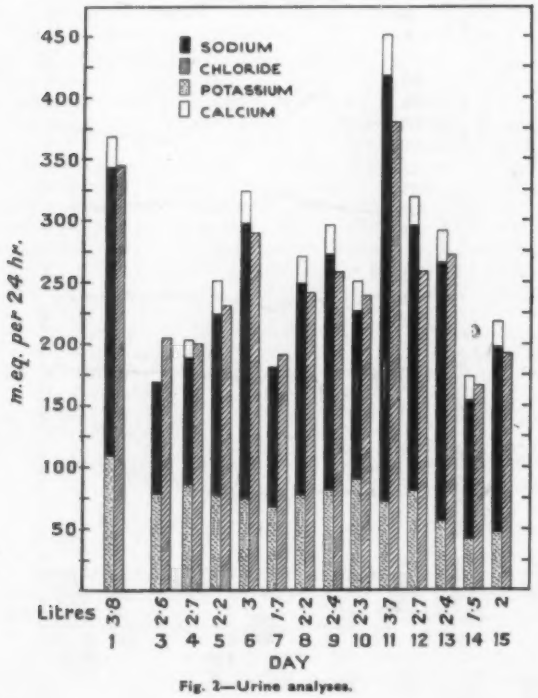


Fig. 2—Urine analyses.

Since the apparent gains of sodium and chloride ions by the body were in amounts equivalent to one another and, moreover, closely followed the gain of fluid, it was concluded that sweating might have been sufficient to account for this discrepancy. An approximate calculation reveals a total apparent gain by the body of sodium chloride of 87 m.eq. a day. This figure could be accounted for not only by the experimental errors involved in collecting the urine but also by the salt lost in the profuse sweating (average composition of sweat 25 m.eq. of sodium chloride per litre), in the aspiration of bronchial secretion, and in the saliva and fæces (saliva contains 10 m.eq. of sodium chloride per litre, and fæces contain about 2% of the total intake of sodium [Peters and van Slyke 1932] but no chloride).

In addition to the total salt content of the body, attention must also be paid to any alterations in its total potassium content. In the present case the apparent total gain of potassium in the period studied was 80 m.eq. The potassium content of the fæces in the same period could be taken as 8% of the total intake of potassium (Peters and van Slyke 1932)—i.e., 75 m.eq. Since the plasma-potassium level remained normal, the residual 7 m.eq. of potassium was presumably lost in the saliva and bronchial secretions (saliva contains about 25 m.eq. of potassium per litre).

The urinary output of calcium was often as much as 26 m.eq. per 24 hours, but this probably reflects the large intake of calcium and the fact that the patient was totally recumbent. The amount of calcium in the fæces was not estimated; hence the exact state of calcium balance was unknown.

Summary

The nutrition and fluid and electrolyte balance in a case of tetanus are reported.

Blood analyses over twenty days showed no significant deviation from normal.

A satisfactory correlation was obtained between the administration and the excretion of fluid and electrolytes.

We wish to thank Dr. H. G. Garland for allowing us to investigate his patient; the staff of the department of urology for their technical and secretarial assistance; and Mr. J. Hainsworth and Miss C. E. Campbell, of the department of medical photography, St. James's Hospital, for the illustrations.

REFERENCES

Forrester, A. T. T. (1954) *Brit. med. J.* ii, 342.
Gamble, J. L., Ross, G. S., Tisdall, F. F. (1923) *J. biol. Chem.* 57, 633.
Honey, G. E., Dwyer, B. E., Smith, A. C., Spalding, J. M. K. (1954) *Brit. med. J.* ii, 442.
Howarth, A. T. (1954) *Univ. Leeds med. J.* 3, 87.
Lassen, H. C. A., Bjørneboe, M., Ibsen, B., Neukirch, F. (1954) *Lancet*, ii, 1040.
Peters, J-P., van Slyke, D. D. (1932) Quantitative Clinical Chemistry. London; vol. I.
Shackleton, P. (1954) *Lancet*, ii, 155.

LEIOMYOSARCOMA OF THE STOMACH WITH INTRAPERITONEAL PERFORATION

J. F. HORLEY
M.B. Lond.
PATHOLOGIST, ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON, SUSSEX

REPORTS of leiomyosarcoma of the stomach are sufficiently uncommon for individual examples to deserve attention on this account alone. Moreover, because the prognosis with suitable treatment may be excellent, the importance of distinguishing this neoplasm from carcinoma of the stomach makes its recognition especially important.

The incidence is difficult to compute accurately, for many reports have been concerned with single examples. Watson (1950) states that most authorities accept an incidence of 1 case in every 1000 malignant gastric neoplasms. However, Marvin and Walters (1948) found, in the records of the Mayo Clinic for 1907–47, 16 cases among 10,000 surgically verified cases of gastric carcinoma, an incidence of 1 in 625; but 10 of these had occurred in 1940–47. Marshall and Meissner (1950) found 9 cases of leiomyosarcoma in 1171 operations for malignant growths of the stomach; and Cowdell (1950) described 5 examples found among 370 gastric neoplasms. These figures suggest that the present incidence may be about 1 in every 100 gastric malignant growths.

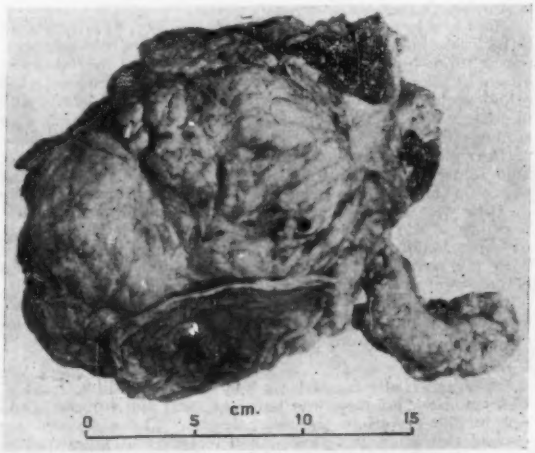
Whatever the true incidence may be, its importance can never be judged by weight of numbers alone; for, if it is recognised, there may be a chance of cure in a patient who would be considered hopelessly inoperable had he a gastric carcinoma of similar extent.

Case-report

A man, aged 49, was admitted to the Royal Sussex County Hospital complaining of severe pain on the left side of the abdomen of sudden onset; for the past 6 months he had had discomfort in his epigastrium.

On examination he was restless, sweating, and in pain, with blood-pressure 105/70 mm. Hg. His abdomen was distended and tender, with guarding, and some rigidity of the left side. Bowel sounds were diminished. Clinically a perforated viscus was suspected.

Laparotomy was done by Mr. W. R. Forrester-Wood. A large cystic swelling was found adherent to the stomach, and transverse colon and had perforated into the lesser sac. It was considered impossible to remove the tumour at that time; instead it was incised and drained of some 30 oz. of dark fluid. The abdomen was closed with drainage of the neoplasm and lesser sac.



Leiomyosarcoma of stomach: complete specimen. Tail of pancreas can be seen emerging from right border. Uppermost perforation led into lesser sac.

Postoperatively the hæmoglobin was 92% (100% = 14·8 g.). Subsequently, in spite of intravenous therapy, the blood-urea level rose to 178 mg. per 100 ml. on the tenth postoperative day, and twenty-four hours later the patient died.

Necropsy twenty-four hours later showed no evidence of recent loss of weight. In the abdomen was found a tumour with irregular contours but roughly spherical (see figure) and measuring 21 × 16 × 10 cm. Its centre had degenerated and been discharged, leaving a wall which varied in thickness from 3 cm. to paper thinness and was firm and rubbery in consistence. Two perforations of this cystic neoplasm led into the peritoneal cavity: one opened into the lesser sac, and the other was the aperture through which the tumour had been drained to the surface at operation. The neoplasm was adherent to the transverse colon and the spleen, but the adhesions could be broken down easily. It was blended intimately with the tail and body of the pancreas, and one segment of the growth formed part of the wall of the stomach. A perforation of the gastric mucosa, measuring 2 × 1 cm., opened into the centre of the neoplasm and thus communicated with the two perforations already mentioned. All the remaining organs of the body were normal, in particular no metastasis was found.

Microscopy.—Sections, taken from many parts of the neoplasm, were stained with hæmatoxylin and eosin, Van Gieson, phosphotungstic acid hæmatoxylin, and Mallory's trichrome stains. The tumour consisted chiefly of fusiform cells which stained like smooth muscle. The morphology and arrangement of the cells varied considerably in different parts of the neoplasm: in some there was a very regular pattern of interlacing fibres with few mitotic figures; in others the cells were plumper and pleomorphic, with 2–3 mitotic figures per high-power field. The tumour had broken through the muscularis mucosa of the gastric wall and was nowhere completely encapsulated. It was growing well into the substance of the pancreas but, except in a few places, the growing edge was tipped with a layer of fibroblasts and round cells. The appearances were those of a leiomyosarcoma of the stomach.

Discussion

Leiomyosarcoma of the stomach is described as endogastric when the main bulk of the tumour, usually sessile, lies within the lumen of the stomach, and exogastric when it expands outside it. According to Golden and Stout (1941) these tumours occur with equal frequency in either sex, and may be found at any age.

To the naked eye the tumours are usually irregularly lobulated, and to the touch they are firm and rubbery, quite unlike stony hard and friable carcinoma. Pedunculation, with cyst formation from central degeneration of the neoplasm, is not uncommon in the exogastric type. Extension of growth takes place by slow expansion, and the tumour's invasive powers are usually slight; hence metastases are slow to develop and were seen in less than 20% of the reported examples. However, a few cases, such as that of Lyons and Schneider (1943), have been described in which widespread metastases were found in the presence of a relatively small primary growth.

Microscopically, increased mitotic activity and invasion of neighbouring organs may be found, but parts of the tumour, especially in isolation, may be difficult to distinguish from simple leiomyomas. For this reason, and because the term leiomyosarcoma, although histologically correct, may suggest erroneously a highly malignant neoplasm, Golden and Stout (1941) prefer to describe them as malignant leiomyomas.

Clinically, leiomyosarcoma of the stomach, especially the exogastric type, may be completely silent until some complication arises. Intestinal blood-loss from ulceration of the overlying gastric mucosa may lead to severe and progressive anæmia, and this, combined with the paradoxical coupling of a large epigastric tumour with slight loss of weight, may enable the diagnosis to be made preoperatively.

The present case is unusual in several ways. Anæmia was not a feature, and the tumour, although large, was not palpable, possibly because of cystic degeneration.

Perforation into the peritoneal cavity, causing an acute abdominal emergency, has been reported previously only 5 times: in 4 (Fritzsche 1918, Baumgartner 1939, Mass and Kirshbaum 1940, Golden and Stout 1941) it was fatal; but in 1 (Shepherd 1950) resection was followed by recovery. In 3 of these 5 cases the tumour was mistaken before necropsy for a perforated gastric carcinoma.

Summary

A case of leiomyosarcoma of the stomach with perforation into the peritoneal cavity is described.

Leiomyosarcoma of the stomach is diagnosed more often nowadays and may not be so uncommon as used to be supposed.

Such cases repay diagnosis because the prognosis is good after surgical excision.

I wish to thank Mr. Forrester-Wood for allowing me to report a case admitted under his care and for the interest he has shown in the preparation of this paper.

REFERENCES

Baumgartner, C. J. (1939) *West. J. Surg.* **47**, 27.
Cowdell, R. H. (1950) *Brit. J. Surg.* **38**, 3.
Fritzsche, R. (1918) *KorrespBl. schweiz. Ärz.* **48**, 1273.
Golden, T., Stout, A. P. (1941) *Surg. Gynec. Obstet.* **73**, 784.
Lyons, C. G., Schneider, M. (1943) *Amer. J. Roentgenol.* **49**, 393.
Marshall, S. F., Meissner, W. A. (1950) *Ann. Surg.* **131**, 824.
Marvin, C. P., Walters, W. (1948) *Arch. Surg.* **57**, 62.
Mass, M., Kirshbaum, J. D. (1940) *Amer. J. Roentgenol.* **44**, 716.
Shepherd, J. A. (1950) *Brit. J. Surg.* **37**, 479.
Watson, K. (1950) *Ibid*, p. 21.

LEIOMYOMA OF THE STOMACH

AN UNUSUAL CASE

H. R. KER
M.B. Lond., F.R.C.S.
SURGICAL REGISTRAR, CHARING CROSS HOSPITAL GROUP, WEMBLEY HOSPITAL

MYOMA of the stomach is not an exceptionally rare tumour. Aird (1949) states that it occurs once in every 2000 gastric neoplasms. It may be pedunculated and attached to the serous or mucous aspects of the stomach, and usually presents by causing pyloric obstruction or ulceration of a submucous growth. The case here described is of interest because the only symptom was nocturnal dyspepsia, present for some years, and because of the unusual manner in which it finally became an emergency.

Case-report

The patient was a fit retired Guards' officer of 77. On Feb. 18, 1955, he slipped and fell on ice, and was brought to Wembley Hospital complaining of pain in the left hip. Clinical and radiological examination showed an intracapsular fracture of the neck of the left femur, and he was admitted for pinning.

Fig. 1—The tumour after removal.

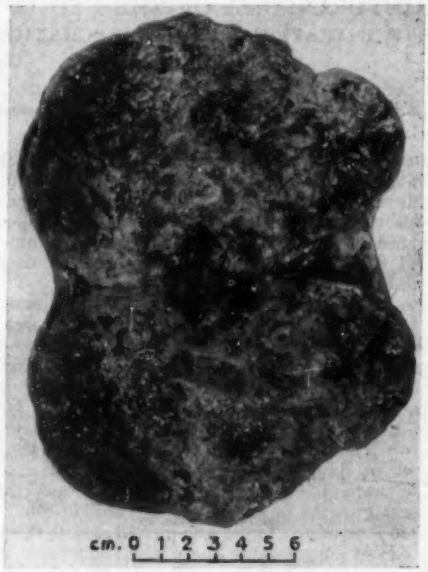


Fig. 2—The cut surface of the tumour.

In the course of routine preoperative examination he stated that he was perfectly well except for nocturnal dyspepsia, from which he had suffered for about seven years. There was a slight feeling of fullness after meals during the day, but when he retired to bed he would get colicky epigastric pain, and would vomit a small amount of bile-stained fluid almost every night. The house-surgeon discovered a round, mobile, non-tender tumour, the size of a grapefruit, situated in the epigastrium just to the right of the midline. The only other abnormality was a hydrocele of the right tunica vaginalis.

It was felt that the treatment of his fracture was of more urgent importance than his abdominal tumour, and as X-ray examination did not reveal any evidence of a secondary deposit, a Smith-Petersen pin was inserted by Mr. A. J. Cokkinis on Feb. 24.

Postoperative progress was satisfactory, apart from his old feeling of epigastric discomfort, and bilious regurgitation on the first day. On Feb. 26 he complained of more pain, and the vomiting became more severe. A milk drip was tried, but this did not relieve him, and an intravenous drip with gastric aspiration was set up.

I first saw him on the 4th postoperative day, by which time he had been on intravenous fluids for three days. He had been taking fluids by mouth, but the aspirations had exceeded the intake by about 3 oz. per day. He was a thin man, with a hard round mobile tumour in the epigastrium to the left of the midline. This fact was pointed out to the houseman, who announced himself to be undismayed—the tumour had been on the right on admission, and if it chose to move, he could not hold himself responsible for it. At this stage it was found that a barium meal performed at the request of his own doctor in 1949 was available. This showed that the stomach and first part of the duodenum were pushed to the left apparently by some radiotranslucent body. These films had been taken with the patient standing. There had apparently been no clinical evidence of a tumour at that time.

It was decided that since gastric obstruction was complete, laparotomy must be performed. The provisional diagnosis was carcinoma of the stomach, or pancreatic cyst.

Operation

On March 1, after anæsthesia had been induced by Dr. R. J. Clausen, the abdomen was palpated, and the tumour could not be felt at all in the epigastrium. The abdomen was opened through a left paramedian incision. A large tumour 15 cm. by 12 cm. (figs. 1 and 2) was found in front of the descending colon just below the level of the umbilicus. When it was delivered into the wound, it was found to be

attached to the centre of the lesser curvature of the stomach by a pedicle three fingers-breadth across, in which were running large blood-vessels. The tumour, by moving to the left, had caused a partial volvulus of the stomach. There were no secondary deposits, and no other cause of intestinal obstruction could be found.

The pedicle was ligatured in three bites, the tumour removed, the raw area buried in peritoneum, and the abdomen closed.

Postoperatively, the patient's condition improved rapidly. The Ryle tube was removed on the following day, and he resumed a full diet on the fourth postoperative day. For the rest of the stay in hospital, necessitated by his fractured femur, he suffered no dyspepsia, either lying or standing. When seen in outpatients two months later, he stated that his old pain and vomiting had completely gone. The microscopic section of the tumour showed a typical myoma with no evidence of malignancy.

Discussion

It seems, from the history, the size of the tumour, and the previous barium meal, that this tumour had been present for at least seven years. It apparently caused little trouble when the patient was standing upright, but when he lay down at night, it slipped to the left, falling into the hollow at the side of the lumbar vertebral bodies, causing a partial volvulus of the stomach, and his pain and vomiting. This was well seen when the patient was relaxed under anæsthesia, and the tumour then descended even further on the left, and could not be felt in the epigastrium. When he took to his bed after the pinning of his femur, the tumour was unable to return to its normal position, and obstruction became complete.

I wish to thank Mr. A. J. Cokkinis for his permission to report this case.

REFERENCE

Aird, I. (1949) Companion in Surgical Studies. London.

Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION AND SOCIÉTÉ FRANCAISE D'ORTHOPÉDIE ET DE TRAUMATOLOGIE

ON May 5–7 the association and the society held a combined meeting in Paris under the chairmanship of their presidents, Prof. BRYAN MCFARLAND and Prof. P. PADOVANI.

Surgery of the Paralysed Lower Limb

Equalisation of Length

Mr. R. I. STIRLING (Edinburgh) said that when shortening of the longer limb was indicated he preferred, in the case of the femur, a long oblique osteotomy of the mid-shaft fixed by transverse screws after the necessary overlap. Union was certain, which it was not after transverse resections, and he disliked the subtrochanteric operations because of possible damage to the blood-supply of the epiphyseal region and later osteo-arthritis. Stapling of the epiphyses was uncertain and in any case would not provide more than an inch of shortening. In the tibia he used a Z-resection; $1^1/_2$ inches of shortening was the limit acceptable at one operation, but it could be repeated later. The calf muscles were sometimes slow to recover, and a raised heel for a while was helpful.

In bone-lengthening operations the counter-pressure points should be in the bone itself and not beyond a joint, for fear of overstretching the ligaments. Equally one must beware of damaging a joint surface by undue pressure. He used four pins in the same bone, and in the case of the femur took care to distract the knee first. He used a Z-osteotomy in both femur and tibia, and emphasised the importance of complete division of periosteum and fascia. In the case of the tibia there was grave danger that the lower end of the fibula might lag behind, rendering the ankle-joint unstable, and he therefore preferred now to fuse the lower end of the fibula diaphysis to that of the tibia, particularly if the lower end of the fibula already lay unduly high.

A poor circulation already present in the limb was no contra-indication to bone lengthening. The best age was 11–13, but it could be done earlier if the difference in length was not altering, or in a completely flail limb. Over the age of 16 union was much slower to occur. In cases of partial paralysis bone-lengthening operations often altered the muscle balance, so that they should precede any stabilisation or tendon-transplant operations. If the muscles were already balanced, it was usually better to shorten the other limb.

In 120 cases he had had only 4 of interference with the peripheral circulation, and all recovered; the increase should not exceed $^1/_2$ inch per day. The incidence of subsequent arthritis had not been significant, and any distortion of the foot was usually easily corrected by manipulation.

Paralytic Lesions of the Hip with Particular Reference to Dislocation

Mr. G. BLUNDELL JONES (Exeter) remarked that the inherent stability of the hip could be spoilt by the presence of contractures or by alterations of the bony contours. Paralysis led to coxa valga, and coxa valga was a potent cause of dislocation. Pelvic obliquity might be due to contractures of either hip or trunk. With regard to corrective procedures, he thought that it was probably impossible by tendon transplant to replace the hip abductors; Mustard's iliopsoas transplant was the most effective method. Osteotomy of the base of the femoral neck fixed with a Capener plate was very satisfactory for marked coxa valga, and not only in paralytic cases. In spastic cases preliminary tenotomies and occasionally shortening of the femoral shaft might be required. He remarked that the onset of paralysis after the age of 2 might lead to coxa valga but rarely to dislocation; dislocation was almost always the result of poliomyelitis in infancy. Shelf operations or arthrodesis were rarely indicated. In planning treatment the degree of coxa valga, rotational deformity, and condition of the acetabulum all needed assessing; if arthrodesis was required he thought the Charnley central dislocation procedure was the best.

Tendon Transposition in the Buttock and Thigh

Mr. J. M. P. CLARK (Leeds) thought that the revulsion which followed the first enthusiasm with which the work of Robert Jones and Tubby was greeted was now on the wane. It was important to realise that it was impossible to replace a completely paralysed muscle, that no muscle training will ever alter muscle imbalance, and that deformities may recur even after arthrodesis. Tendon-transposition was best done to prevent deformity, and transplants needed protection for at least six months after operation.

Replacement of hip abductors was most difficult; the iliopsoas transplant was satisfactory if a normal gluteus maximus and sartorius were present, but it was a severe operation. In the presence of a good gluteus maximus the backward shifting of the origin of tensor fasciæ femoris could help a weak gluteus medius.

In adduction deformity tenotomy, neurectomy, and osteotomy all had a place. In preventing recurrence of the deformity he had successfully tried a new procedure in which the adductor origin detached from the pubis and mobilised with nerve-supply intact was transposed under rectus femoris and attached to the iliotibial band.

In the case of the knee, transplants into the quadriceps could be done (1) to prevent buckling, (2) to enable a calliper to be discarded, or (3) to prevent flexion deformity of the knee. They were most effective when the foot was stable and any knee deformity had been corrected, and in the presence of strong hamstrings and at least fair glutei. Semitendinosus and gracilis medially, and biceps laterally, were all used, but semimembranosus must be left intact. Mr. Clark stressed the importance of the normal coupled action of the hamstrings with the knee extensors in the last part of the movement of straightening hip and knee, which made the transplant a good one. The use of sartorius and tensor fasciæ femoris had not been satisfactory.

Tendon Transplantation in the Prevention of Foot Deformities

Mr. D. M. BROOKS (London) said that such operations were easy, could be done early, and did no irremediable damage, but unfortunately at least a third failed in their purpose. Equinus deformity could readily be controlled by appliances; calcaneus was uncontrollable but rarely crippling. An iron was less efficient in controlling valgus and varus of the heel, and a tight tendo achillis aggravated both deformities. Pronation and supination of the forefoot both caused pain in

the big-toe region, and instruments were useless in their control.

One must know accurately the power of muscles and what the deforming muscles were—a matter difficult to assess before the age of 5. It was useless to employ as a transplant a muscle whose automatic phase of function was at variance with that of the recipient; hence the futility of transplanting tibialis anterior to the calf. The essential principles were that full passive correction should be possible, the deforming force must be removed, and the paralysed muscle action must be replaced.

Transplants of the peronei to the calf in cases of calcaneo-cavus with or without valgus had failed in more than half of 49 cases. Transplanting extensor hallucis longus to the first metatarsal neck failed in 24 of 39 cases of pronation of the forefoot, and in a similar proportion transposing peronei to the dorsum of the foot failed to improve plano-valgus. The most successful group was that of equinovarus deformities, where only 9 out of 22 failed to give improvement; 6 of the failures were due to the later disinsertion of the transplant from its new attachment. In all groups secondary deformity was not uncommon.

Mr. Brooks concluded that despite the many failures tendon transposition was a useful mitigating procedure in carefully selected cases, as long as the cause of the original deformity had been eradicated; he doubted whether it was ever worth shifting a muscle which was not itself causing the deformity.

Operations for Relieving Paralysis of Intrinsic Muscles of Toes

Mr. T. T. STAMM (London) said that the Lambrinudi procedure of multiple interphalangeal fusions transferred the activity of the flexors from the interphalangeal to the metatarso-phalangeal joints. When the operation was originally designed it was proposed to attack the accompanying cavus deformity six months later, but this had proved unnecessary since successful toe fusions were found to cure the cavus also. For this operation to succeed there must be no fixed deformity of the metatarso-phalangeal joints. Bony fusion must be produced; fibrous ankylosis gave rise to pain. The insertion of axial Kirschner wires produced too many failures of bony fusion; he thought that the best method was to tie the toes down to a Lambrinudi footplate and to leave the splint on for six weeks. The optimum position was slight flexion of the proximal and slight hyperextension of the distal interphalangeal joint.

If there was fixed extension of the metatarso-phalangeal joints, multiple tendon transplants of the long flexors of the toes to the extensors was a better operation, but this was contra-indicated if there was much fixed flexion of the proximal interphalangeal joints. The two procedures were complimentary and should not be looked on simply as alternatives for any given case. Failures were due to choice of the wrong operation, faults in technique, and occasionally absence of bony fusion.

He considered that the operation of transplanting the extensor tendons into the metatarsal necks was a poor one; it was unsound physiologically because the timing of the automatic action of these muscles was wrong for the new function required of them, and in any case the tendons seemed to return by magic to their original insertions.

In the subsequent discussion Mr. H. J. SEDDON (London) spoke of the need for independent assessment of a surgeon's results from tendon transplants in the foot; the basic idea was good, but fewer cases than were supposed were in reality worth operating on. Prof. K. E. KALLIO (Helsinki) showed a film of his operation for arthroplasty of the hip, using a cap of skin taken from the abdomen to cover the femoral head.

Osteochondritis of the Hip

Experimental Study

Dr. J. LEMOINE, working with Dr. R. LAGRANGE, largely at Oxford, had operated on sixty rabbits 2–3 weeks old. Ligation of the anterior circumflex vessels was found to produce only minimal changes, but ligation of the round ligament was followed by varying degrees of enlargement of the femoral head, with flattening, increased radiographic density, and often some subluxation. Angiograms showed increased vascularity of the head. The neck of the femur often thickened, and both macroscopically and microscopically the changes were very similar to those seen in Perthes disease.

Perthes Disease

Prof. M. FÈVRE reviewed a series of cases of Perthes disease. 80% had been in boys; the age ranged from 4 to 13 years, with a maximum between 4 and 7 years. He had not found trauma or infection elsewhere to be important antecedents. Pre-existing coxa valga he had sought but had rarely found. He divided cases into two groups, depending on whether changes started in the top of the femoral head or around the margins of the epiphysis. The former he ascribed to interference with the blood-supply from the round ligament, the latter to interference with the supply from the circumflex vessels; primary acetabular change might occur also.

Osteochondritis in Congenital Dislocation of the Hip

Dr. P. PETIT had observed 23 instances of osteochondritis among 87 congenitally dislocated hips. He had not seen a case occurring on the normal side. The prognosis could not be assessed in the first year of life, and in some of the earliest cases there had been complete disappearance of the head. 10 out of 11 cases under the age of 1 year treated by manipulative reduction and fixation in the Lorenz position were complicated by osteochondritis. He reviewed the possible causes of the condition, and suggested that the important factors were: (*a*) forcible reduction; (*b*) too powerful traction (the condition is commoner in high dislocations); and, above all, (*c*) pressure on the femoral head associated with poor articular contact and torsion of the capsule and its vessels from fixation in the extreme positions. The younger the patient the greater the danger of osteochondritis; the femoral heads of older patients appeared to be more resistant. All cases were due to therapeutic causes, and he recommended reduction by gradual traction with fixation in not more than 60° of abduction, moderate internal rotation, and about 30° of flexion.

Osteochondritis dissecans

Prof. R. GUILLEMINET (Lyons) described 7 cases of osteochondritis dissecans of the hip (Kœnig's disease). Their ages varied from 12 to 51, with most occurring in the 18–25 age-group. 5 were male, 2 female. In most there had been no history of trauma, the onset being gradual over the previous six to eighteen months. A few gave a history of sudden "catching" of the hip, but in most the symptoms and signs were those of an osteo-arthritic hip. He had tried removing the affected area, which was always on the top of the head or slightly medial to it, and had even filled the resultant cavity with bone chips, but the results were poor. If conservative treatment failed, arthrodesis was the operation of choice, though one hip recently treated by arthroplasty was still satisfactory. Histologically the appearances were those of a sequestrum; except over the affected area the articular cartilage of the femoral head was normal. Differential diagnosis involved the exclusion of caisson disease, aseptic necrosis from other causes, and tuberculosis.

DISCUSSION

In the discussion Sir REGINALD WATSON-JONES (London) emphasised that Perthes "disease" was a disorder from loss of local blood-supply due to various causes. Rest in bed for two or three years *could* prevent deformation of the femoral head. One must wait at least twenty years to know whether later degenerative arthritis had in fact been thus avoided, but three years' bed rest in childhood was a small price to pay to avert fifty years of later disability which otherwise followed with such certainty.

Prof. J. TRUETA (Oxford) illustrated the histological and vascular changes in experimental osteochondritis in the rabbit. There was thickening of the epiphyseal cartilage, and vessels could be seen penetrating vertically into the substance of the femoral head, particularly from the outer side. In the man there was no blood-supply to the femoral head from the round ligament at the age of 18 months; almost all came from the outer side. At the age of 4 vessels could first be seen entering the head from the round ligament; only after fusion of the capital epiphysis did anastomosis occur between these vessels and the major supply from the outer side, which also supplied the femoral neck; hence the associated changes in this region. After the age of 16 the anastomosis with circulation from the round ligament was adequate and the danger of Perthes disease past. It had been shown by arteriograms that extreme positions of the hip obstructed the circulation to the femoral head.

Mr. A. H. C. RATLIFF (Edinburgh) gave the results of a late follow-up on 49 cases of Perthes disease, followed for an average period of 17 years. Apart from a few who received no treatment all had been treated by frame fixation. Assessed by a point system relating to pain, degree of activity, range

of movement, and radiographic appearances, they showed 18 good, 19 fair, 7 poor, and 5 very poor results. Although 75% of the total were still fully active and free from pain only 38% had good radiographic appearances. Of the 9 untreated cases only 1 had a good hip. The most important factor affecting the prognosis was the state of ossification of the head; the younger the child the better the prognosis. The average age of onset of the "good" results was 6, of the "fair" 8, of the "poor" 9, and of the "very poor" 10. Absence of fragmentation was of good prognostic significance. A good immediate result was likely to be maintained for at least twenty-five years, even though half of such cases were unsatisfactory radiographically.

Dr. C. CASSUCIO (Italy) said he preferred the term "osteochondrosis." He had done biopsies of capsule, cartilage, and bone in 18 cases. These showed fibrosis of the capsule, thickening of the cartilage, and the formation of an irregular layer of vacuolated cartilage deep to it which in places had grown down or herniated into the cancellous bone. Islands of cartilage were to be found between necrotic bone trabeculæ—an appearance similar to that seen in other osteochondroses. The findings were similar to those found in experimental osteochondritis in rabbits. All cultures from the biopsy specimens had proved negative. In confirmation of Japanese work he had found similar changes to follow experimental wounding of the articular cartilage.

Arthroplasty in Late Treatment of Congenital Dislocation of Hip

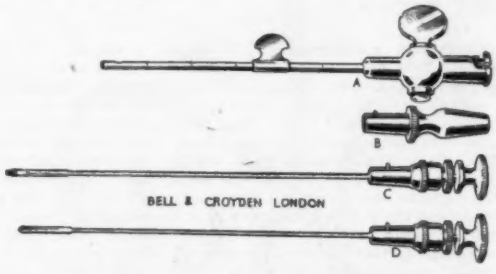
Prof. R. MERLE D'AUBIGNÉ (Paris) had done 129 arthroplasties in 96 patients, but felt that the indications for any form of arthroplasty should be restricted. Arthrodesis was the operation of choice in unilateral cases; only 2 of 17 cases had been unsatisfactory. The Judet operation could give good results but they were too rare. In bilateral cases, where the lesion was asymmetrical, an arthroplasty on the bad side had given poor results in half the cases because of subsequent deterioration in the other hip. 12 out of 16 bilateral arthroplasties had been satisfactory. Arthrodesis of the more painful side by increasing stability sometimes relieved pain on the other side. Resection of the head and neck as in the Girdlestone operation, particularly in those that had had a previous osteotomy, had given very good results, and was also useful where previous arthroplasty with some form of plastic prosthesis had failed. After showing examples of the various groups he concluded by recommending arthrodesis for the unilateral case, and for bilateral cases fusion of the painful side with later arthroplasty or pseudarthrosis on the opposite side if necessary. If both sides were stiff and painful at the first examination, then bilateral arthroplasty or resection of head and neck were indicated.

New Inventions

ASPIRATION TROCAR AND CANNULA

THE disadvantage of the usual trocars and cannulæ used for aspirating fluid from the chest is that, if they are so made as to give a straight run through from cannula via tubing to syringe, air can enter the pleural space when the trocar is withdrawn and before the aspirating syringe is connected to the cannula. Air may also enter if attempts have to be made to unblock the trocar during aspiration. Alternatively, if the tubing is attached to the trocar by an angled tube, obstruction is very apt to develop at the angle and is difficult to overcome during the aspiration.

The instrument illustrated here consists of a graduated cannula (11 B.W.G. × 2½ inches or 14 B.W.G. × 2½ inches), and a stopcock with a bayonet 'Sima' fitting



(A). This connects with a stuffing-box and sharp trocar (C), a stuffing-box and blunt pilot (D), or an adapter (B) attached to a length of rubber tubing which leads to a three-way tap and a large aspirating syringe.

With the sharp trocar in position the cannula is inserted into the appropriate intercostal space. The trocar is withdrawn. To prevent air entering, the stopcock is closed before the stuffing-box and sharp trocar are disconnected. The adapter with the rubber tubing leading to the three-way tap and aspirating syringe is attached. The stopcock is opened, and aspiration is done in the usual way.

If the cannula becomes blocked it can be cleared without admitting air to the pleural space. The stopcock is closed, and the stuffing-box and blunt pilot (D) are substituted for the adapter. The stopcock is opened and the cannula cleared with the pilot, which is then withdrawn. The stopcock is again closed while the adapter is substituted for the stuffing-box and blunt pilot. The stopcock is opened and the aspiration continued.

These needles are made by Messrs. John Bell & Croyden, Wigmore Street, London, who also supplied the illustration.

Brompton Hospital, London

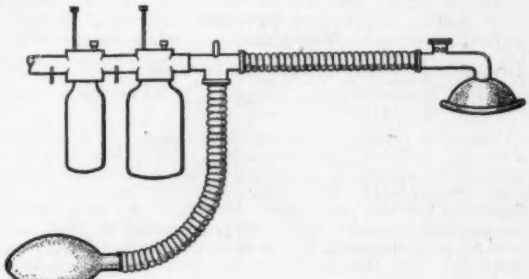
KENNETH ROBSON
M.A., M.D. Camb., F.R.C.P.

MODIFIED MAGILL'S ATTACHMENT TO BOYLE'S APPARATUS

THIS modification allows the anæsthetist to hold the reservoir bag with both hands for artificial respiration.

Many anæsthetists have for years been using circle absorbers with a length of corrugated hosing leading off to the reservoir bag. This method has the great advantage that the bag may be held in both hands, and much information may be obtained from it. Artificial respiration is more efficient and less tiring with two hands than with one; hyperventilation is more easily achieved; the anæsthetist is able to circumambulate in a radius of some five feet round the machine to watch the operation, attend to drips, and so on.

The same facility may be had with the semi-closed circuit, as shown in the accompanying figure. Magill's



attachment is modified by interposing a standard length of hosing (from a circle absorber) between the bag-mount and the bag. The net physical effect of this modification is to increase the capacity of the reservoir by about 500 c.c. The behaviour of the circuit is virtually unaltered; once filled with gases it is identical with that of the unmodified attachment.

Nitrous oxide/oxygen anæsthesia with moderate artificial hyperventilation is greatly facilitated by this modification.

JOHN BULLOUGH
M.B. Lond., F.F.A. R.C.S., D.A.
Consultant Anæsthetist,
Dartford Group of Hospitals

Reviews of Books

Clinical Diagnosis

ELMER G. WAKEFIELD, B.S.A., B.SC., M.D., F.A.C.P., consulting physician, section of medicine, Mayo Clinic. New York: Appleton-Century-Crofts. 1955. Pp. 1611. $22.50.

IT is rare nowadays to meet a large clinical textbook written by a single author. Dr. Wakefield has tackled his formidable task with courage and energy, and the thoroughness and skill with which he has carried it out are no less remarkable. Single authorship gives unity and balance to the contents and style of a book, and it averts repetition—virtues which are seldom evident when there are many contributors and one hard-pressed editor. The increasing complexity of medicine has made the single author's task very difficult—but, as this book shows, not impossible. It is a considerable tribute to Dr. Wakefield's skill and scholarship that it is hard to tell what subjects are his own special field, or when he is drawing, as he must at times, largely on the experience of others.

Very little has escaped his net. Common disorders are discussed at proper length, and uncommon ones are kept in their right perspective; but even the rarest finds a niche somewhere. Although his avowed purpose is to consider only the clinical aspects of diagnosis, radiographic, endoscopic, and laboratory methods are briefly mentioned and some indication is given of their comparative usefulness. There are also chapters on bodily constitution, the physical effects of environment, and disturbances of electrolyte balance, which are unusual and valuable. Dr. Wakefield has had the courage and originality largely to discard the customary academic lists of differential diagnoses. There are copious references to recent publications in many languages, and though the illustrations are few they are clear and well chosen.

The Principles and Practice of Surgical Nursing

D. F. ELLISON NASH, F.R.C.S., assistant surgeon, St. Bartholomew's Hospital, London. London: Edward Arnold. 1955. Pp. 1007. 30*s*.

NURSES in training are nowadays no less harassed than medical students; and it is alarming that a textbook of nursing concerned only with surgical aspects should run to just over 1000 pages. Nevertheless there is no adipose tissue in this book; all its pages are valuable, and some repetition, intentionally introduced for ease of reference, adds little to its weight. It is a thoroughly sound and complete work which will undoubtedly find favour as a reference book. Mr. Ellison Nash has tried to present each subject from first principles and thus avoid a didactic approach and empiricism; and he has succeeded.

Graphologie et physiologie de l'écriture

Dr. H. CALLEWAERT. Louvain: E. Nauwelaerts. 1954. Pp. 168. $1.80.

THE title of his book notwithstanding, Dr. Callewaert does not believe that graphology yet exists. He has studied by means of cinematographic records the individual movements and postures of writing, which he describes in the first part of the book, and he has acquainted himself with the assertions of the more serious graphologists, which he finds empty of logic and without any statistical foundation. Dr. Callewaert reviews the anatomical and physiological determinants of script which make it characteristic for the individual, and he draws a sharp distinction between speech, spontaneously acquired by imitation, and writing which has to be learnt by painful labour. The constitutional element in psychomotor activity may give an individual imprint to each man's writing, but culture, schooling, and other extraneous influences may also lend the script a deceptive individuality. Writing movements cannot be properly equated with expressive gestures, for they lack the freedom of choice which the latter enjoy. Dr. Callewaert, in his just disapproval of the common claims of graphologists, unduly repudiates the expressive and individual quality in handwriting and its potential correlation with personality traits, but his interesting exposé deserves the attention of psychologists and neuropsychiatrists.

Clinical Aspects of the Autonomic Nervous System

L. A. GILLILAN, PH.D., M.D., associate professor of anatomy, Graduate School of Medicine, University of Pennsylvania. London: J. & A. Churchill. 1955. Pp. 316. 45*s*.

Professor Gillilan, who is an anatomist, gives an excellent and detailed description of the topography of the autonomic nervous system and a full account of what is known of its physiological functions; and the book is valuable for this in itself. When it comes to clinical applications, however, he is on less familiar ground, and is sometimes misleading. It is, for example, untrue that "digitalis causes vomiting only when the dosage exceeds the therapeutic level"; and to say that "peptic ulcers . . . tend to occur in the slender hyposthenic individual" is ingenuous. His enthusiasm for dividing people into vagotonic and sympathotonic types may leave the unsophisticated reader with the impression that the complex interrelationships between mind, personality, body structure, functional order, and disorder are simpler than they really are. The text is liberally illustrated by good line drawings.

Peripheral Vascular Diseases

2nd ed. EDGAR V. ALLEN, B.S., M.A., M.D., M.S. in med., F.A.C.P.; NELSON W. BARKER, B.A., M.D., M.S. in med., F.A.C.P.; EDGAR H. HINES, JUN., B.S., M.A., M.D., M.S. in med., F.A.C.P., professors of medicine, Mayo Foundation Graduate School, University of Minnesota. Philadelphia and London: W. B. Saunders. 1955. Pp. 825. 91*s*.

BASED on the experience of the senior authors and their colleagues at the Mayo Clinic over the last twenty-five years, this book gives a balanced general picture, and, in addition, sufficient information to satisfy the student interested in the historical development of physiology, pathology, and methods of investigation. The first edition, published in 1946, quickly established this as the leading textbook in its field. For this edition new subjects, such as aortography, the surgical treatment of aortic aneurysms, and vessel grafting, have been introduced. Written with proportion and economy, the text points to the problems still outstanding, but does not leave the reader in a maze of controversy. One attractive feature is that each chapter is headed by a photograph and a short biography of a pioneer in vascular work.

Diagnostic électrocardiographique (2nd ed. Paris: Masson. 1954. Pp. 448. Fr. 4800).—Feeling that the maze of modern electrocardiography is becoming labyrinthine in its complexity, Dr. André Jouve, Dr. Jacques Senez, and Dr. Jean Pierron, and their collaborators, have introduced in the second edition of their textbook, the concept of the vectorial loop as a thread to guide the groping student through its mazes. No single hypothesis so far advanced, they believe, fully explains the genesis of the electrocardiogram; nor do they accept the vectorcardiogram as such an explanation. On the other hand they feel that the vectorcardiogram offers a convenient method of synthesising for the mind's eye the growing number of different electrocardiographic leads currently employed, and that as such it is a useful teaching instrument.

The general arrangement of the book is unchanged. The first section is devoted to the basic theory and technique of electrocardiography, both of which are handled in great detail, and this is followed by the main section on the normal and abnormal electrocardiogram, considered in relation to alterations in the electrical field of the heart in the body. A chapter is given to the arrhythmias, and a short section on clinical applications of electrocardiography ends the book. It is profusely, and on the whole clearly, illustrated, though some of the illustrations are overloaded with information (30 leads and 3 vectorial loops are shown in one cardiogram). Moreover, the arrangement of the leads is not uniformly depicted which means that they are often difficult and sometimes unnecessarily tedious to interpret.

In its breadth of scope this book is a triumph. But a risk is inherent in its catholicism; for in trying to supply the needs of both the clinician and the research-worker it may not appeal fully to either.

ready answer

TO BARBITURATE 'HANGOVER'

While many patients on "½ gr. phenobarbitone nocte" will wake refreshed from a good night's sleep, those needing somewhat higher doses may find that the depressive effects of the drug intrude into their early waking hours. It has been suggested that this may be due to the affinity of barbiturates for enzymes involved in brain respiration—enzymes in whose constitution vitamins of the B group play an important part.*

But now it appears that this affinity is readily broken by components of the B group or ascorbic acid. That is why the simple measure of taking one or two NICORBIN Tablets on waking is so successful in countering barbiturate "hangover."

*Proc. Roy. Soc. Med., 1954, 47, *215*

NICORBIN
TABLETS TRADE MARK

Each tablet contains: Aneurine hydrochloride B.P. (B_1), 1 mg; Riboflavine B.P., 1 mg; Nicotinic acid B.P., 10 mg; Ascorbic acid B.P. (C), 25 mg. In bottles of 50 & 500 tablets.

GLAXO

GLAXO LABORATORIES LIMITED, GREENFORD, MIDDLESEX BYRon 3434

Neophryn

with Antihistamine —for hay fever

NEOPHRYN, now reinforced with antihistamine,* brings symptomatic relief quickly . . . safely to adults suffering from uncomplicated hay fever. Delivered as a fine spray by the convenient plastic atomizer, this powerful combination focuses its decongestive activity on blocked nasal cavities without any undesirable side-effects. In the absence of a cure for hay fever, it is indeed just such properties that make NEOPHRYN with ANTIHISTAMINE a perfect prescription for short-term local treatment.

**thenyldiamine hydrochloride*

Neophryn

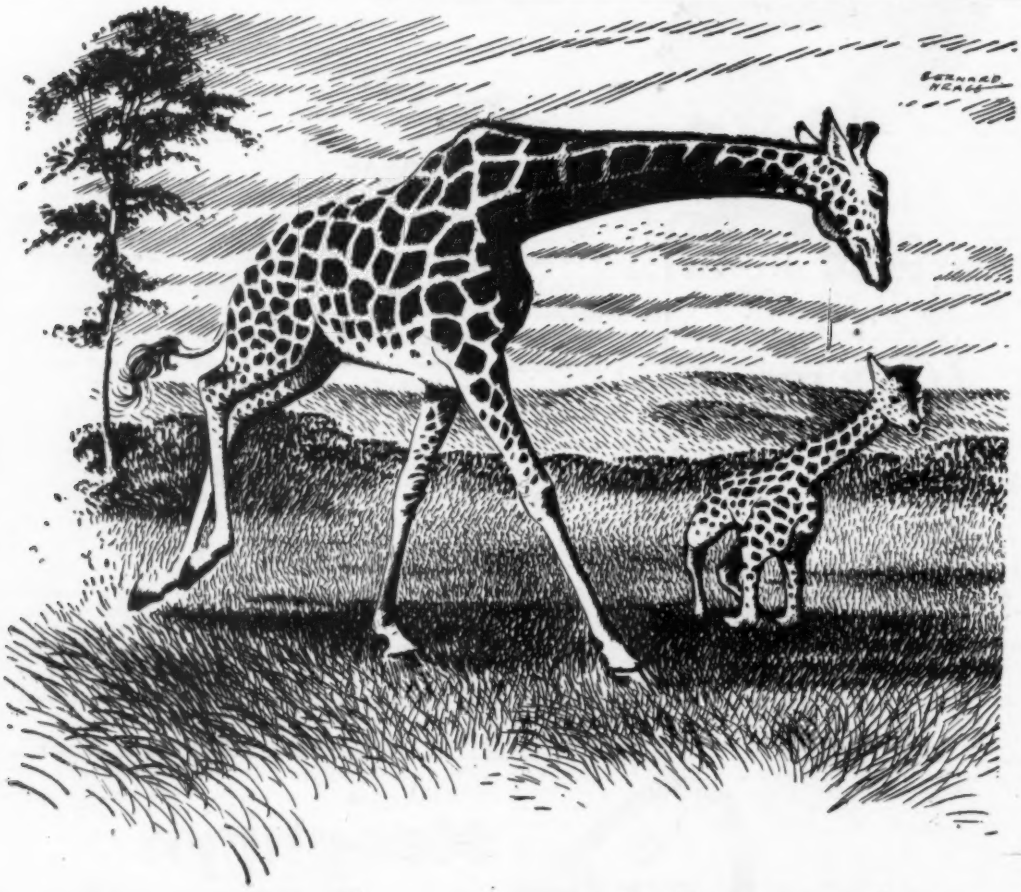
Trade Mark

NASAL SPRAY WITH ANTIHISTAMINE

Also available without antihistamine as drops and spray

BAYER **PRODUCTS LIMITED · Neville House · Kingston-on-Thames · Surrey**

Associated export company: WINTHROP PRODUCTS LIMITED



up...and...up-and-coming.

Terramycin* BRAND OF OXYTETRACYCLINE
since its discovery in 1950 has become the most widely prescribed broad-spectrum antibiotic. Its rapid antibacterial action in so wide a range of infections, the fact that it is well tolerated and is available in many convenient forms, and its positive contribution towards reducing the cost of health undoubtedly explain this world-wide acceptance.

TABLETS · ORAL SUSPENSION · PAEDIATRIC DROPS
OINTMENTS · INJECTIONS.

Tetracyn* BRAND OF TETRACYCLINE
discovered in the Pfizer Research Laboratories promises to be as valuable an anti-infective as Terramycin. Like Terramycin, TETRACYN is very soluble and stable and produces comparable blood levels.
TETRACYN has been used in selected cases in British hospitals since October 1954, and experience is confirming its early promise.
TETRACYN is indicated where certain antibiotics produce troublesome side reactions such as nausea and vomiting or prove to be ineffective.

Pfizer

DISCOVERER OF TETRACYCLINE

PFIZER LIMITED · FOLKESTONE · KENT

*Trade Marks Chas. Pfizer & Co. Inc.

THE LANCET
LONDON: SATURDAY, JUNE 25, 1955

Heroin

THE Government's announcement that after the end of this year the importation of heroin (diamorphine hydrochloride) is to be stopped, and its manufacture restricted to small amounts needed for scientific purposes,[1] has been followed by strong protests in the medical and lay press. The ban is being imposed to give effect to a resolution, adopted by the Economic and Social Council of the United Nations, urging all governments to take this step with the object of checking illicit traffic in the drug. The Minister of Health had previously consulted the Standing Medical Advisory Committee of the Central Health Services Council, which endorsed the view that suitable alternatives existed.[2] But on June 3 the representative body of the British Medical Association asserted that the Government could not claim to have consulted the medical profession without having consulted the association. The representative body was satisfied that heroin should not be exported but called for continuation of its manufacture.[3] The chief arguments adduced in favour of this policy are that in some circumstances heroin is superior to any other drug; that there is little illicit traffic in the drug within this country and no illegal exportation of it; and that a legal ban on the manufacture of heroin can do little good, since this drug is readily made from opium or crude morphine.

Regarding efficacy, opinion is by no means united. It seems to be fairly well established that heroin produces greater euphoria with a slighter risk of nausea than an equivalent dose of any other morphine preparation; and some clinicians are convinced that it is sometimes of peerless value—notably in controlling intractable pain and in treating tracheitis. On the other hand, controlled trials comparing heroin with other preparations have been lacking; and as early as 1931 a panel of experts (including the late Prof. W. E. DIXON, of Cambridge) ended its report to the League of Nations with the following words:[4]

"In view of the evidence which we possess, and especially the fact that all the beneficial actions of heroin can in our opinion be obtained by one or other of the drugs mentioned, we believe that heroin can be entirely dispensed with. If the doctors in countries where heroin is used are afforded the opportunity of examining and testing clinically the morphine derivatives to which we have drawn attention, we feel little doubt that they may be induced to dispense with the use of heroin entirely."

Suppression of manufacture had already been mooted at an international level in 1923 and 1925; but in 1931 the proposal was again defeated, mainly on the ground that the drug was of medical value. But these decisions of course preceded the introduction of synthetic analgesics and of new morphine derivatives.

However much views may differ on the need for heroin to be at the doctor's disposal, we can all agree that in this country nearly all the heroin manufactured is used legally. There are here at present only 54 known heroin addicts, and the Home Secretary is satisfied that there is no substantial hidden addiction.[5] Nor is there any evidence that heroin is being exported illegally. In any case, as Dr. D. R. LAURENCE[6] has pointed out, legally manufactured heroin contributes negligibly to the world's illicit traffic. It would, he says, be impossible to control such traffic without control of the illicit traffic in opium and morphine, from which heroin is readily manufactured. Dr. LAURENCE's assertion is supported by an official report (1951)[7] that

"reports from governments during the last two years indicated that, thanks to stricter measures of control over manufacture of and trade in heroin put into effect by various governments, diversions from legal into illicit channels due to thefts, robberies, forged prescriptions or laxity in respect of issuance of medical prescriptions have been reduced to the minimum."

And Prof. GEORGES BROUET, of Paris, has remarked[8]:

"If morphine continues in current use, heroin is so easy to prepare that there is little point in banning it internationally. If there was any absolute need for prohibiting its use in therapeutics in order to combat addiction, the principle might conceivably be accepted; but if the effect of such prohibition were to be illusory, as we fear it would, it is hard to see why patients who may benefit from it need be deprived of it."

What then led the Economic and Social Council to make its recommendation? It was acting on a resolution by the sixth World Health Assembly that "the abolition of legally produced diacetylmorphine ... would facilitate the struggle against its illicit use."[9] Both the Assembly and the W.H.O. Expert Committee on Drugs Liable to Produce Addiction (whose reports were before the Assembly) were impressed by the extensiveness of the illicit use of the drug: in 1951 alone 120 kg. was seized, including 62 kg. in Europe and 26 kg. in the United States.[7] This heroin is believed to have originated mostly in the Far East and on the Mediterranean seaboard. Such traffic can be stopped only by universal enforcement of rigorous measures. At present the countries of the world fall into three groups: (1) those (including the U.S.A.) where all heroin is illicit; (2) those (including Britain and France) where the law seeks to control manufacture and distribution; and (3) those where there is no effective control, and which, in some cases, export morphine or heroin illicitly on a large scale. Britain's decision to impose the ban can have no direct effect on this traffic; but it might persuade our close neighbour, France, which has decided against the ban (and where 1651 g. of heroin was seized in 1951), to reverse her decision. The more countries that impose the ban the easier would be the task of those checking illicit traffic; for wherever the ban operates any heroin found is certainly illicit. Those countries that now act on the Council's recommendation may

1. See *Lancet*, May 7, 1955, p. 965.
2. *Ibid*, June 18, 1955, p. 1271.
3. *Ibid*, June 11, 1955, p. 1220.
4. *Ibid*, 1931, ii, 55.
5. *Ibid*, June 25, 1955, p. 1325.
6. *Ibid*, June 18, 1955, p. 1277.
7. *Bull. Narcotics*, 1953, 5, no. 2, p. 45.
8. *Ibid*, p. 17.
9. *Ibid*, no. 3, p. 53.

also hope to influence the few countries in the third category—where there is little or no control of production or distribution—to raise themselves eventually to the second or first category. Most nations are less insensitive than we sometimes suppose to the climate of opinion around them; if only one or two isolated countries were left trafficking freely in heroin the weight of world opinion might lead them to re-examine their practice. By now imposing the ban Britain is making her own small contribution to this end.

But the question remains: by taking this action shall we be depriving patients of an essential drug? An impartial observer might reply that we do not know. Those who would suppress the use of heroin have brought forward persuasive evidence that the risk of addiction is greater than with any other morphine preparation, and some (but no overwhelming) evidence that another drug can always take its place equally well.[10] Thus we are in a position where each side—those who insist on having heroin at their command and those who insist that this is needless—are firmly convinced without satisfactory objective evidence. It may not be too late to seek that evidence by a controlled trial. Such a trial would be lengthy and very difficult; but it would not be impeded by ethical considerations, since any differences between heroin and its alternatives are not gross. If the trial clearly showed heroin to have unique virtues the first clause in the World Health Assembly's resolution—"Being convinced that diacetylmorphine is not irreplaceable for medical practice"—would fail, and we should not be blameworthy if we reverted to the manufacture of heroin for use within our borders. If on the other hand no clear advantage emerged, we should maintain the ban without further question. Meanwhile, one thing we must not do is to insist on retaining the status quo on the basis of the present unsatisfactory evidence. As a member of the United Nations we cannot divorce our own well-being from that of our neighbours. By article I of the United Nations Charter we have pledged ourselves "to achieve international coöperation in solving international problems of an economic, social, cultural or humanitarian character." It is only by readiness to coöperate—to give and take—that the United Nations or its agencies can be made to work at all.

Cobalt and Anæmia

COBALT deficiency is known to occur in sheep and cattle in Denmark, Australia, and some other places where the soil and grass are deficient in this element. The syndrome, which has various local names, such as "bush sickness," is characterised by some anæmia, and by poor growth, lack of appetite, and emaciation.[11] The fact that vitamin B_{12} contains 4·5% of cobalt shows that cobalt is necessary for normal nutrition in man as well; but since the daily requirement of vitamin B_{12} in man has been put at no more than 1 μg., cobalt can properly be regarded as a "trace element." Cobalt has been used for the treatment of anæmias which are refractory to the normal hæmatinics, especially iron; such anæmias develop in chronic infections, after burns, in kidney disease, and in some children. Compared with the daily requirement of about $^1/_{25}$ of a microgramme the doses of 20–60 milligrammes daily of cobaltous chloride (about 9–25 mg. of cobalt) that are given therapeutically are relatively enormous, and it is clear that any action cobalt has on refractory anæmias must be quite different from its physiological action.

WINTROBE and his co-workers[12] produced local inflammation in rats with turpentine and showed that the consequent anæmia could be overcome by giving cobalt salts. They were surprised to find that polycythæmia was induced in these animals, and further work[13] showed that the absorption of iron from the alimentary tract was increased by giving cobalt. Later work suggested that daily doses of up to 100 mg. of cobaltous chloride given to patients with anæmia associated with chronic infections produced a reticulocytosis in about six days and an increase in the circulating red cells and hæmoglobin; but, judging by the few reports published in the past five years, this treatment has not been widely applied in practice.

GARDNER[14] investigated the use of cobalt for the relief of anæmia associated with chronic renal disease. Such an anæmia has usually been treated with repeated blood-transfusions, but the results are not satisfactory and reactions may add to the burden of an already embarrassed kidney. He soon found that cobalt had to be given for at least four weeks if any reasonable erythropoietic response was to result; so patients whose kidney disease was causing rapidly increasing azotæmia and acidosis were not included in the trial. He found 17 cases in a sufficiently stable state; 8 were diagnosed as chronic pyelonephritis; 6 had chronic, and 1 acute, glomerulonephritis; 1 had the nephrotic syndrome; and 1 had polycystic kidneys. The red-cell counts before treatment varied from 2,750,000 to 3,920,000 per c.mm. and their hæmoglobin levels from 6 g. to 11 g. per 100 ml. Most of these patients showed a definite response; for instance, in the patient with an initial hæmoglobin of 6 g. per 100 ml. the level rose to 9·6 g., and in the patient with 11 g. per 100 ml. initially the level rose to 13·1 g.; red cells rose proportionately rather less. If treatment was continued some further improvement occurred for three months; if treatment was stopped the blood-levels declined slowly, reaching the original level in about twelve weeks. The bone-marrow, examined in some patients, showed increased proportions of erythroblasts. GARDNER observed that cobalt salts, especially in solution, are very liable to cause anorexia, nausea, and vomiting; he overcame this difficulty by using enteric-coated tablets and giving them only at meal times. There was no evidence that the cobalt affected the kidney disease, one way or the other, but the patients felt better with a higher hæmoglobin.

COLES[15] has reported results with cobalt treatment of some of the anæmias of childhood. Altogether 50 patients were treated. In 31 the anæmia was associated with infection, 10 were anæmic premature infants,

10. Eddy, N. B. *Ibid*, no. 2, p. 39.
11. Underwood, E. J. *Nutr. Abstr. Rev.* 1940, **9**, 515.
12. Wintrobe, M. M., Grinstein, M., Dubash, J. J., Humphreys, S. R., Ashenbrucker, H., Worth, W. *Blood*, 1947, **2**, 323.
13. Gubler, C. J., Cartwright, G. E., Wintrobe, M. M. *J. biol. Chem.* 1950, **184**, 575.
14. Gardner, F. H. *J. Lab. clin. Med.* 1953, **41**, 56.
15. Coles, B. L. *Arch. Dis. Childh.* 1955, **30**, 121.

in 3 the anæmia was due to rhesus incompatibility, and the remainder were a miscellaneous group. COLES states that these types of anæmia usually respond poorly to iron, liver, and other hæmatinics, but she describes no evidence that these particular 50 patients were in fact refractory. The infections that caused anæmia were predominantly otitis media and bronchopneumonia, and the blood picture was normochromic. COLES does not give individual counts, but only average figures on which it is more difficult to judge the value of the treatment. Most of the patients received 25 mg. of cobalt sulphate daily for three weeks, and no toxic effects were noted. The average rise of hæmoglobin was from 9·23 g. per 100 ml. to 11·24 g. per 100 ml., and the greatest rise occurred in the first week. The 9 premature infants received 20 mg. of cobalt sulphate daily for three weeks; the average hæmoglobin level rose from 9·17 g. per 100 ml., initially to 12·28 g. per 100 ml., again with the greatest increase in the first week. The other patients also responded satisfactorily. Cobalt was also given to a child with a chronic hypoplastic anæmia who was being treated with repeated blood-transfusion; there was no response—which agrees with the experience of most others. COLES examined the bone-marrow before and after cobalt treatment in 12 patients. There was an increase of erythropoietic cells in all; in the patients with infections the increase was mostly in the pro-erythroblasts and the earlier normoblasts, whereas in the premature infants the later normoblasts were most increased. COLES suggests that this denotes that cobalt has a different action in the two groups: in the premature infants iron-supplies are adequate and cobalt enables the erythroblasts to utilise iron more efficiently; in the anæmia of infection cobalt directly stimulates erythropoiesis in a previously depressed marrow.

Cobalt as a stimulator of erythropoiesis has been tried for the treatment of red-cell aplasia in adults. This is a progressive anæmia without hæmorrhages or other complications, in which examination of the marrow shows few erythroblasts of any stage but much less affection of granulocytes and megakaryocytes. SEAMAN and KOLER[16] reported such a case which responded satisfactorily to cobalt therapy, and FOUNTAIN and DALES[17] also reported a response when cobalt chloride was given in a dose of 100 mg. daily for two months.

All these reports will encourage further trial of cobalt in the treatment of patients with these anæmias that respond poorly, if at all, to the usual hæmatinics, who usually have to be treated by repeated transfusions. But two warnings must be given. In the first place, it is desirable that patients with these refractory anæmias should receive cobalt therapy early in the course of their disease; the value of treatment with cobalt is not easily assessed when it follows soon after a course of blood-transfusions, the exhibition of cortisone, or splenectomy. In the second place, in the dosage used cobalt can have unpleasant toxic effects. The immediate effects, such as nausea, vomiting, and anorexia, can be averted by using enteric-coated tablets. Some patients have unpleasant tinnitus or flushing of the face.[14] A more serious goitrogenic effect has been reported.[18] KRISS et al. were administering enteric-coated tablets of cobaltous chloride in doses varying from 30 to 100 mg. daily for the treatment of sickle-cell anæmia. Goitre and hypothyroidism developed in 2 of their patients; in one treatment for myxœdema was needed, and in the other the thyroid tumour appeared clinically to be a carcinoma. They found 3 other cases of thyroid hyperplasia by examining post-mortem tissues. The explanation of this action is uncertain. It is known that cobalt, given in doses larger than those administered clinically, can cause polycythæmia in rats. It seems to be agreed that this action is due to anoxia from inhibition of some of the enzymes concerned with the transport of oxygen; thus LEVY et al.[19] found that cobalt inhibited two sulphydryl-dependent enzymes—succinic dehydrogenase and choline oxidase. The erythropoietic stimulation may therefore be a response to a toxic anoxæmia. The goitrogenous action noted by KRISS et al. may be due to interference by cobalt with the enzyme system that forms mono-iodotyrosine. If the "stimulating" action of cobalt on erythropoiesis in refractory anæmias depends on its toxic properties, then it should clearly be administered cautiously and should not be included in iron or other preparations for the treatment of anæmia. Like all other hæmatinics, it should be given alone.

16. Seaman, A. J., Koler, R. D. *Acta hæmat.* 1953, **9**, 153.
17. Fountain, J. R., Dales, M. *Lancet*, March 12, 1955, p. 541.
18. Kriss, J. P., Carnes, W. H., Gross, R. T. *J. Amer. med. Ass.* 1955, **157**, 117; Gairdner, D., Marks, J., Roscoe, J. D. *Lancet*, 1954, ii, 1285.
19. Levy, H., Levison, V., Schade, A. L. *Arch. Biochem.* 1950, **27**, 34.
20. Nielsen, J., Strandberg, O. *Acta radiol., Stockh.* 1942, **23**, 189.

Annotations

CANCER OF THE LARYNX

In the past it has been very difficult to assess the results of different forms of treatment for cancer of the larynx. This was due partly to the relatively small number of cases in individual series, but very largely to differences in definition, classification, and grading of the tumours. In the past decade or two there has been a growing tendency to centralise the management of these relatively uncommon tumours, and laryngologists and radiotherapists are slowly approaching unanimity on classification and grading. In the past three months three large series of results have been published in which the classification was the same.

Growths of the laryngopharynx were previously known as extrinsic laryngeal cancers; now they are described by most laryngologists as cancers of the pharynx. Anatomically they belong to the pharynx; clinically they behave quite unlike the true laryngeal growths. They produce symptoms late, they metastasise early to the regional lymph-nodes, they respond very poorly to any form of treatment, and they have a most depressing prognosis. The term "laryngeal cancer" is now usually limited to those growths which were previously known as intrinsic, or endolaryngeal, cancers. Most of these produce symptoms early, metastasise late, are eminently treatable, and have a much better outlook. Indeed, in the case of early carcinoma of the vocal cords the prognosis is better than with cancer at any other site.

In 1942 Nielsen and Strandberg[20] divided cancer of the larynx into four stages:

In *stage 1* the tumour is limited to the anterior two-thirds of one of the true vocal cords, and the mobility of the affected cord is unaffected. There may be invasion of the anterior commissure, but no further extension.

In *stage 2* the tumour involves the anterior commissure and, perhaps, a greater or lesser part of the anterior two-thirds of the true vocal cord. The mobility of the cord is still unaffected.

In *stage 3* the tumour extends beyond the vocal cord, which is more or less fixed. Involvement may be unilateral or bilateral. The lymph-nodes, however, are not affected.

In *stage 4* the tumour extends beyond the larynx, commonly with lymph-node involvement.

Falbe-Hansen,[21] of Copenhagen, describes the results of surgical treatment of laryngeal cancer. Operation is indicated, he says, in subglottic cancer and in cancer of the vocal cord with complete or almost complete fixation. It is further indicated where a "test-treatment" with radiotherapy has shown no effect, and in cases of residuum or recurrence after such therapy. 38 laryngectomies were done between January, 1942, and January, 1949, with a minimum follow-up period of five years. 35 of the patients were men, only 3 women. Of the 38 cases, 36 belong to the 3rd or 4th stage. In each of the 2 cases in stage 1 or 2 there had been a recurrence after radiotherapy. Five years or more after laryngectomy 21 of the patients—55% of the total—were alive and well; 6 other patients had died from other causes, without signs of residuum or recurrence, less than five years after operation. The lymph-nodes were removed, together with the larynx, in 7 patients with stage-4 cancers. 1 of them died fifteen days after the operation from severe sepsis, and recurrences developed in 2; but 3 were alive and well at the end of six to eight years, and 1 died of appendicitis seven months after operation, without any signs of recurrence. Preoperative radiotherapy was given in 14 cases; and 9 of these patients are alive and symptom-free after more than five years, while 4 have died, without any sign of recurrence, at various intervals after the operation. These results are impressive.

Wang and O'Donnell,[22] two radiotherapists at the Massachusetts General Hospital, record the results in 253 cases of cancer of the larynx, with the emphasis on radiotherapy. These patients were treated between 1931 and 1949, again with a minimum follow-up period of five years. They advocate tomography and lateral soft-tissue radiography for determining the extent of the tumour. 95% of their patients were men. Of 35 patients stage-1 growths treated by radiotherapy, 80% were symptom-free after five years; of 15 patients treated by surgery, 86% were alive and well.

Of 19 patients with stage-2 growths treated by radiotherapy, 68% were alive and well after five years; of 12 patients treated by surgery, 58% survived. Of 58 patients with stage-3 growths treated by radiotherapy, only 24% survived for five years; no less than 53% of those treated surgically survived for the same period. Of 46 patients with stage-4 growths treated by radiotherapy, 15% were free of recurrence five years after treatment; of 7 patients treated surgically, 13% survived.

Nielsen[23] believes that the main problem in the treatment of these tumours centres round coöperation between surgeon and radiotherapist, to obtain "the highest numbers of cures with the maximum of functional results." At the moment, he says, opinions seem to vary between the two extremes of 100% surgery and 100 % irradiation. Nielsen, a radiotherapist, has collaborated with Falbe-Hansen, his laryngologist colleague, in treating his cases. Since 1942 all stage-1 and stage-2 cases have been referred primarily for radiotherapy; the majority of stage-3 cases have also been primarily irradiated, except for subglottic cancers and cancers of the vocal cords with complete or almost complete fixation; primary irradiation was preferred in stage-4 cancers arising from the subglottic region. Of the 235 patients in this series the majority were treated by radiotherapy. In the two earlier stages about 80% survived for five years after radiotherapy; and a further 10% died from another cause before the five-year limit. Of 18 cases of subglottic cancer, a third were cured by surgery, and only 1 single case by radiotherapy.

Several points emerge from these three large series, amounting to over five hundred cases assessed by one classification. In cases of early cancer of the true vocal cord, without limitation of mobility, the results of radiotherapy differ very little from those of surgery in terms of life and "five-year cures"; but the functional results, as regards the voice, are much better with radiotherapy. "In this respect I think most laryngeal surgeons are agreed," says Falbe-Hansen; but, he adds, "only very few seem to act accordingly." Surgery alone gives incomparably better results than radiotherapy alone in stage-3 growths which have infiltrated the vocal cords or extended beyond them, yet are still within the confines of the larynx. But, as Wang and O'Donnell say, since a quarter of stage-3 growths can be controlled by radiotherapy, with preservation of voice, "a fair trial of this conservative method should be carried out. . . . If the tumour does not respond favourably to radiation, total laryngectomy may still be done." Mono-block dissection of larynx and glands will probably be practised more commonly in the future in stage-4 growths, and even better results will be obtained in these more advanced tumours by a formal combination of radiotherapy and surgery. As in other aspects of otolaryngology, the emphasis is shifting to preservation of function.

21. Falbe-Hansen, J. *J. Laryng.* 1955, **69**, 255.
22. Wang, C. C., O'Donnell, A. R. *New Engl. J. Med.* 1955, **252**, 743.
23. Nielsen, J. *J. Laryng.* 1955, **68**, 370.

HYPOPHYSECTOMY IN DIABETES

In young adults with "malignant" diabetes, for whom nothing but further deterioration can otherwise be expected, Prof. H. Olivecrona and his colleagues in Stockholm have obtained considerable improvement by removal of the pituitary gland.[1]

In the Ciba Foundation lecture, written with Dr. Rolf Luft, which he gave in London on June 15, he explained that this work, starting in 1951, was based on experimental evidence of the diabetogenic action of growth hormone and adrenocorticotrophic hormone,[2] and on reported regression of diabetes in several cases of pituitary deficiency. So far, he has operated on 17 patients, all with advanced diabetic retinopathy and all with renal damage in some degree—often far advanced. Of the 3 operative deaths 2 were from complications such as may follow any major operation; and it should be remembered that the juvenile diabetic with vascular disease is not a good subject for surgery. Of the 4 patients who have died since leaving the clinic (2 of them surviving eighteen months), 3 were treated too late to derive substantial benefit. The remaining 10 patients are alive after periods ranging from five months to three and a half years, during which they have had substitution therapy with cortisone, thyroxine, and (in most cases) testosterone or stilbœstrol, together with smallish doses of insulin. Up to date, the eye-ground changes appear to have been arrested: exudates have decreased or remained stationary; proliferation of blood-vessels is no longer progressive; and hæmorrhages have slowly disappeared, though new ones have occasionally been observed in the first few months. In every case, except 1 in which hypophysectomy was incomplete, renal blood-flow has increased or remained stationary; and of the 8 patients who had arterial hypertension all now have blood-pressures within normal limits. From this preliminary assessment of hypophysectomy as a means of preventing blindness and irreparable renal damage "we think that our results are encouraging" said Professor

1. See *Lancet*, 1954, ii, 700.
2. *Ibid*, 1952, i, 35.

Olivecrona. Better results, he believes, could be expected if the operation were carried out earlier.

Prof. C. H. Best, F.R.S., presided at the lecture, and a vote of thanks was proposed by Lord Adrian, P.R.S., who expressed lively interest in what he regarded as partly a development of neurosurgery.

ANGIOCARDIOGRAPHY IN CHEST DISEASE

IT might have been thought that angiocardiography would prove of great value for investigating pulmonary disease, but so far this application has been comparatively limited. Abels [1] now describes angiocardiographic studies in cases of pulmonary and mediastinal abnormalities discovered in mass-radiography surveys. Of the 12 illustrative cases that she cites 4 had lesions in the lung fields, and in 3 of these a presumptive diagnosis of arteriovenous aneurysm or hæmangioma was confirmed by displaying the vascular tree. Tomography, as Abels points out, is very helpful in such cases since it often shows vascular tufts associated with the lesions. The fourth pulmonary lesion was a curvilinear opacity near the heart shadow which was shown to be an anomalous pulmonary vein. In the other 8 cases radiographs of the chest showed mediastinal or paramediastinal abnormalities; and in this type of case, as Abbott et al.[2] had previously found, angiocardiography was of more decisive diagnostic importance: suspected vascular lesions were accurately localised—for example, a putative aortic aneurysm was proved to be an aneurysm of the pulmonary artery, and a thymoma associated with a systolic murmur was demonstrated before operation not to be a lesion of a great vessel.

The scope of angiocardiography in diseases of the chest may be extended in the future. Cudkowicz and Armstrong [3] have reported differences between the vascular patterns of primary and of secondary neoplasm; and Slesser et al.[4] have averted fruitless thoracotomy in some patients with bronchial carcinoma by demonstrating neoplastic involvement of the great vessels. But, as Abels points out, angiocardiography is not without risk. It should be undertaken only where it seems essential in order to establish the diagnosis.

DELIVERY BY SUCTION

IN the past many ingenious and elaborate obstetric forceps have been devised—one of these was so complex that a screwdriver for running repairs was included in its handle. Nowadays forceps are lighter and shorter. Even the axis-traction instrument devised by Tarnier, and so beautifully worked out mathematically by Milne-Murray, is no longer necessary now that the high-forceps operation is rarely practised. It is generally agreed that if more than gentle traction is necessary this usually indicates that the time or method of delivery has been misjudged. For the simple low extraction Wrigley's forceps have become popular; and Finderle [5] describes an even lighter implement which can be applied to the vertex by suction. It consists of a horn-shaped cup which at its wider end is covered by rubber and at its narrow end is attached by tubing to a syringe. The position of the head is determined, and the wide end of the horn is introduced through the introitus and applied to the head. A partial vacuum is created by two or three thrusts of the syringe and maintained by a stopcock. There are light metal finger-rests on the narrow end of the horn, and by traction on these the head is delivered.

Finderle states that in the last 4000 or more deliveries at his clinic the use of forceps has been completely discontinued. He reports 132 successful extractions; 103 of the patients were primigravidæ, and the majority of the babies were mature and of average weight. There were no deaths or complications attributable to the extractor, and from the information that the use of forceps has been discontinued we must conclude that there were no failed extractions. Sometimes an artificial caput succedaneum has formed on the baby's scalp, but this has always disappeared within a few hours. The level of the head at delivery is not specified; but the cæsarean-section rate at the clinic is only just over 2%, so apparently the use of the extractor is not confined to cases in which the head is on the perineum. Anæsthesia has not always proved necessary, but episiotomy under local anæsthesia is usually done in the primigravida before the extractor is applied. Finderle claims that the head can be readily rotated by means of the applied horn, and he also reports 4 successful applications to the breech.

It is unlikely that this instrument (which resembles others previously devised) can completely replace the forceps, but Finderle's results suggest that its value should be further tested.

A NEW ENTERIC ORGANISM

THERE is much to be said for the suggestion by Edwards and West [1] that the enteric bacteria should be regarded as a continuous series of interrelated types rather than be classified in rigid groups such as salmonella, arizona, and "paracolon." While some—e.g., *Salmonella typhi* or *S. typhimurium*—have reasonable claims to be regarded as species since they are fairly constant in habit in vivo and in vitro and are readily distinguished from related organisms, we should remember that they owe their places as "type specimens" to their common occurrence as parasites of man in the temperate zone. Deliberate search and chance observation have now raised the number of more or less typical members of the salmonella group to about 300 and at the same time have yielded strains which have some but not all of the biochemical and antigenic characters typical of Salmonella. Many such are probably overlooked, for obvious reasons; some are found once only, studied in some detail, and then put aside "in case another turns up." It seldom does, and for this reason a paper by McDonald et al.[2] is of interest. Since the end of 1951 strains of "atypical paratyphoid bacilli" have been reported from places as distant as Inverness and Newport, Mon. They have been isolated from 99 people, of whom 43 had acute gastro-enteritis and the rest no symptoms at all. Most of the infections were single, but a small epidemic in Gateshead involved 14 people.[3] The organism presumed to be responsible differs from *S. paratyphi B* in that it fails to ferment dulcitol, cannot be typed by bacteriophage, and has the antigenic formula IV, V, XII : b : —(instead of I, IV, V, XII : b : 1,2).

The distinction of infections due to this organism from paratyphoid fever may be of administrative importance. As Savage pointed out,[4] many infections with *S. paratyphi B* cause only an acute enteritis with a short incubation period. The responsibility for differentiating infections by the enteric group of organisms must lie with the laboratory, and this paper is a good advertisement for the Salmonella and Enteric Reference Laboratories. Few diagnostic bacteriologists are adepts at the finer points of antigenic analysis or bacteriophage typing. The reference laboratories not

1. Abels, E. *N.Y. St. J. Med.* 1955, **55**, 1450.
2. Abbott, O. A., Hopkins, W. A., Leigh, T. F. *J. thorac. Surg.* 1949, **18**, 869.
3. Cudkowicz, L., Armstrong, J. B. *Thorax*, 1953, **8**, 152.
4. Slesser, B. V., Britt, R. G., Freer, J. L. *Ibid*, 1954, **9**, 91.
5. Finderle, V. *Amer. J. Obstet. Gynec.* 1955, **69**, 1148.

1. Edwards, P. R., West, M. G. *J. infect. Dis.* 1950, **87**, 184.
2. McDonald, J. C., Price, A., Taylor, J. *Mon. Bull. Minist. Hlth Lab. Serv.* 1955, **14**, 83.
3. Grant, J., Morton, R. *Ibid*, p. 97.
4. Savage, W. *J. Hyg., Camb.* 1942, **42**, 393.

only afford these services to all but are best placed to observe the changing prevalence of bacterial species and the emergence of types not seen before. It would be nice to know how often in the past this new organism has been called a paratyphoid bacillus. That it is a cause of human illness we have little doubt, and it may be found to have an even wider distribution. Whether it is labelled *S. paratyphi B var.*, or *S. java* (which it seems to resemble), or "paracolon" is unimportant (except to the systematists) now that occurrence and identity have been recorded. It matters more that all should realise that the ability to cause disease is not limited to organisms in the Kauffman-White list of salmonellæ.

It would indeed be remarkable if pathogenicity were associated quite strictly with biochemical habit or antigenic structure. Two of the more successful and specialised parasites—*S. typhi* and *S. pullorum*—are both nonconformist in vitro. Until we know far more than at present it will be wise to regard all the organisms which share the major antigenic factors and some of the biochemical habits of salmonella as potential agents of disease.

IMMEDIATE DENTURES

THE Ministry of Health memorandum to local authorities, which we summarised last week, gave some depressing figures to show how much money had been spent on dentures during the first five years of the National Health Service. The total was about £100 million, and, if the present demand is maintained, it is likely that, in a few years' time, 1 in 6 of the population will wear dentures, and two-fifths of them will be under 45. We cannot, of course, know how much of this prosthetic work was avoidable, or just how many sets of teeth have been ruined by neglect, but it is plain enough that the dental health of the nation is far worse than it should be. Energetic propaganda by both doctors and dentists is undoubtedly part of the answer; but, however effective that may be, we shall still have to provide for the edentulous patient for many years to come.

By means of acrylic resins, dentures can now be made far more pleasing æsthetically than when they were made in vulcanite; but patients are understandably becoming more exacting, and a denture is expected to reach a high standard in comfort and efficiency as well as in appearance. As Gimson [1] points out, many of the difficulties of constructing full dentures are the result of leaving the patient edentulous for the customary time of three to six months. Immediate dentures have many advantages, apart from the obvious one of escaping the toothless weeks after extractions. Anatomical changes in the temporo-mandibular joint and in the shape of the tongue are avoided, and there is no opportunity for the patient to learn incorrect habits of mastication, nor for the facial contour to collapse. The task of the dental technician is made easier, for the natural teeth, or an impression of them, can be used as a guide to the occlusion and, if necessary, to the shape and position of the teeth.

Various techniques may be followed, but one which gives good results is to extract the posterior teeth first, and then, after a lapse of six to eight weeks, so make a partial denture. After a further period of a week or two, the anterior teeth are extracted and the denture completed. This is quite satisfactory provided that the patient understands that it will be necessary to have the dentures relined after three or four months, and provided that certain precautions, as outlined by Gimson, are taken. An alternative method, perhaps rather more popular in the United States than in this country, is to perform an alveolectomy when the anterior teeth are extracted. This has advantages when the natural incisors are unduly prominent because of malformation of the pre-maxilla, and it also makes it possible to fit a labial flange to the upper denture. But the nervous patient does not always like the extra operation, and it is perhaps better to reserve alveolectomy for those in whom a good cosmetic and functional result could not be obtained by simpler methods.

When an upper immediate denture is made without an alveolectomy, it is usual to "socket" the artificial teeth, and it is at this stage, Gimson emphasises, that considerable damage may be done to the ridge. There is a temptation to fit the artificial roots well up into the sockets, probably in the hope that when absorption is complete the denture will still be a reasonable fit. Unfortunately what happens is that at the end of seven or eight weeks, the ridge shows deep and permanent cavitation and is anything but suitable as a stable base for a denture. Gimson describes the technical details necessary to ensure a correct fit for the anterior teeth —but, as he is careful to stress, it is essential to make regular adjustments to the denture as absorption proceeds. A new denture will probably be needed in anything from six to twelve months after the insertion of the immediate denture. For success, the patient's coöperation is essential; he must be prepared to return frequently for adjustments, and the dental surgeon must realise how vital these adjustments are.

1. Gimson, A. P. *Brit. dent. J.* 1955, **98**, 387.

RECONSTRUCTION OF HAND DIGITS

RECONSTRUCTIVE surgery of the hand is applied to two broad groups of patients—those with congenital deformities, and those with mutilated fingers. The former group often have associated malformations, but show considerable adaptive powers which may make reconstruction unnecessary or undesirable. Most of the operations designed to replace or refashion digits depend on the use of structures in the hand itself, but several attempts have been made to use the toes to repair a defective or damaged hand. Esser and Ranschburg [1] have described a successful graft of four toes to a hand. Blair and Byars [2] and Young [3] have each described single cases of a finger successfully reconstructed with a toe; while a less successful case has been reported by Neuhof.[4] Clarkson [5] has developed this technique, mainly for thumb defects. A dorsal flap is made on the foot, extending proximally almost to the ankle-joint, and is delayed in one or two stages. The hand is prepared by creating a matching skin defect, and is brought down to the foot. The foot tendons are divided in the ankle region, and are sutured to those in the hand. The skin flap is then sewn in place. Six weeks later the toe is amputated through the metatarsophalangeal joint, and the wound is covered by grafting. The new thumb may be modelled as necessary. In Clarkson's patients nerve suture has not been performed. It would be useful to know the amount of sensory perception in the new digit. Bunnell [6] condemned this type of operation where there was subsequently no reliable tactile and proprioceptive sensation. Nevertheless, the foot-to-hand graft may be of great value to patients in whom local operations are impracticable.

On June 20 the DUKE OF EDINBURGH was installed as an honorary fellow of the Royal College of Surgeons of Edinburgh which is celebrating its 450th anniversary.

The Medical Disciplinary Committee of the General Medical Council will meet on Tuesday, July 12, at 10.30 A.M.

1. Esser, J. F. S., Ranschburg, P. *Ann. Surg.* 1940, **111**, 655.
2. Blair, V. P., Byars, L. T. *Ibid*, 1940, **112**, 287.
3. Young, F. *Surgery*, 1946, **20**, 117.
4. Neuhof, H. *Ann. Surg.* 1940, **112**, 291.
5. Clarkson, P. *J. Bone Jt Surg.* 1955, **37A**, 270.
6. Bunnell, S. Surgery of the Hand. London, 1948.

Special Articles

DISPOSAL OF THE CHRONIC CASE

J. R. D. BAYNE, M.D. McGill
SENIOR HOUSE-OFFICER

MARJORY WARREN, M.R.C.S.
CONSULTANT PHYSICIAN

GERIATRIC UNIT, WEST MIDDLESEX HOSPITAL, ISLEWORTH

IN modern medical practice suffering tends to be reduced to a mathematical equation. We speak of morbidity and mortality rates, incidence of disease, and survival-time. Assessment of disease in these terms gives direction to further study and indicates its urgency. But there is a danger of mistaking a calculated solution for a remedy, forgetting that finally we are treating not a disease but a person. To speak of the "disposal" of patients suggests that the danger is real.

Yet a hospital unit or firm may say that if the chronic cases could be disposed of, there would be room for all the acute cases, and that the need today is for chronic-hospital beds. The implication is that these patients are beyond further therapy and can never return to their home community. If it is held that no therapy is needed the medical staff of a chronic-sick hospital should be small. The medical officer would be expected merely to look after the patients in any acute intercurrent illness. No patients would be discharged.

But who decides that a person is irremediable and beyond therapy? Will the decision be based on the knowledge that this type of case is hopeless, or that this particular patient has not responded? If new therapeutic methods offer new hope, who will review the case? Or what will be the possibility of the patient gaining reassessment if he asks for it?

The following case-history is an example of what may occur. It offers no new therapeutic method, no tit-bits of pathogenic mystery, yet it deserves the attention of the many physicians who every day dispose of chronic cases and sometimes may unwittingly add misery to suffering.

CASE-HISTORY

In July, 1954, the geriatric unit was asked by the regional hospital board to accept a case of long-standing hemiplegia from a chronic-sick hospital in the provinces which was closing for repairs. The patient's home was believed to be at Twickenham, Middlesex. She was admitted on July 28. A brief accompanying letter said: "She has been bed-ridden for years due to left hemiplegia and mentally is still unstable."

The patient was 74 years of age, and able to give a clear and consistent history. She said that until she was on the train she did not know to where she was being moved. She was born with a left-sided weakness and shaking of the left arm. Her two sisters and three brothers were normal. They regarded her as likely to be a burden on them and she determined to be independent. At the age of 16 she entered domestic service and became self-supporting; later on she rented a room and worked as a charwoman. She was able to get about without sticks and to climb the two flights of stairs to her room. She never moved from London. After her mother's death in 1923 she became gradually estranged from her relatives.

In 1925 she entered hospital for the first time because of an attack of influenza. She was persuaded to accept surgical treatment for her deformed left foot, but it was not a success and the wound did not heal. She continued to work, but it became difficult to find jobs because of her disability and local sepsis. In 1935 she re-entered hospital for treatment of a chest infection, and on recovery she was advised to accept amputation of the foot or leg. She refused and was not given her discharge because her leg was regarded as "a danger." Her room was given up and her personal belongings scattered.

In 1940, when the chronic sick were evacuated from the bombing areas, she was transferred from London to a chronic-sick hospital in the provinces, where she remained until 1954. She asked repeatedly if she might get up, but was not allowed even to sit in a chair until lately. The following excerpts from the scanty records, which were sent complete with her, are typical:

1942—She was seen five times and noted as being in "satisfactory condition" and her speech intelligent.

1943—She had a "violent hysterical attack."

1948—She was treated with tincture of stramonium.

1949—There were trophic changes of the feet with bilateral foot-drop.

1950—A complete re-assessment was carried out by a consultant physician interested in rehabilitation. He wrote: "Her mental processes are very unstable. Liable to hysterical attacks and aggressive towards patients at times. For this reason improvement of her spastic state by rehabilitation unlikely."

In the next two years she had two more outbursts of hysteria, and she was twice treated with antibiotics for respiratory-tract infection. Short notes were made at three-monthly intervals up to her transfer to the West Middlesex Hospital.

On examination she was alert, rational, coöperative, and correctly oriented. Her memory for distant and recent events was good. There were no delusions or hallucinations. She was neat and tidy in appearance. The chest and abdomen were normal. The pulse was regular; there was a systolic murmur at the apex and splitting of heart-sounds at all areas; blood-pressure 140/80 mm. Hg; electrocardiography showed a right bundle-branch block. The skin of both lower legs was thin, pink, and shiny, and they became cyanosed on dependency. The left ankle was fixed in equinus deformity. Radiography showed a varus deformity of the left hip suggestive of congenital dislocation of the hip; the pelvis was asymmetrical; and there were osteoporotic changes in the left ankle. There was divergent strabismus with impaired vision of the right eye. Spastic weakness of the left arm and leg with a coarse flapping tremor of the left arm were present. Hæmoglobin 14·4 g. per 100 ml. (97%), and blood Wassermann reaction negative.

She was given clothes and was able to dress at once. Oversize shoes were put on her feet and she was soon able to walk between parallel bars. The orthopædic surgeon then performed a wedge tarsectomy of the left foot. The compression clamps were removed and a new plaster cast applied three weeks after the operation. She tried to walk with a crutch and holding a handrail but was handicapped by her weak incoördinate left arm. Two months after the operation she was given a walking plaster cast and soon could walk pushing a chair. She practised constantly by herself and refused unnecessary help if offered. When the cast was removed, surgical boots were fitted with a small heel-raise on the left boot. She walked with a stick and went up and down stairs unaided. During her stay in hospital she was given new glasses, new dentures, and new clothes. She was interviewed by a welfare officer of the London County Council (since she was never a resident of Middlesex) and accepted by him on Feb. 28, 1955, for a welfare home in the vicinity of her old home. She thus returned after twenty years in hospital and thirty weeks of active treatment.

DISCUSSION

We have related this case-history not to elicit praise for any unit or therapeutic method, or to blame physicians for any lack of interest or treatment. The patient herself says she was treated with great kindness and the record shows no blemish. But we must criticise the negative therapeutic approach that cost the patient twenty years of freedom. Such an attitude is almost inevitable when patients are not seen until they have substantially lost their independence and have become bedfast. Only those who watch the decline from the first stages will appreciate the lost opportunities.

As this case-history shows, even review by a physician skilled in rehabilitation could not undo the psychological adhesions that bound the patient to bed. Yet all that was required finally was encouragement and a positive approach. Mistakes of this kind will not be avoided by the review of patients in chronic-sick hospitals, but only by their repeated review in a long-stay annexe. Whenever possible, the annexe should be an integral part of the unit to which they first appealed for help.

TREATMENT CENTRE FOR ALCOHOLICS IN A MENTAL HOSPITAL *

M. M. GLATT
M.D. Leipzig, D.P.M.
SENIOR HOSPITAL MEDICAL OFFICER, WARLINGHAM PARK HOSPITAL, SURREY

IN 1948 in England and Wales the number of alcoholics with complications ("chronic alcoholics") was estimated at 86,000 (Jellinek 1951). This estimate was based on the percentage contribution of alcoholism to the number of deaths from liver cirrhosis. Deaths from liver cirrhosis have risen from 816 in 1948 to 1155 in 1953 (Registrar-General 1949–54), and the W.H.O. Alcoholism Sub-committee (1952) has suggested that this increase reflects an increase in the rate of alcoholism. In view of the dearth of facilities in this country for the treatment of alcoholics (Dent 1952, Pullar-Strecker 1952, 1955), the following description of a treatment programme evolved by trial and error at this public mental hospital may be of interest.

The Start

Our first alcoholic group was formed in August, 1952, when four alcoholics happened to be in hospital at the same time. These patients felt that they derived benefit from the group approach, and gradually the number of meetings and of alcoholic admissions increased. To start with the group only met for an hour twice weekly; meetings are now held daily, and the male alcoholics form a closely knit, well-organised group who live together in a ward, where they form at least half of the ward population, work together in occupational groups, and usually also take recreation together (Glatt 1955).

The popularity of the group meetings in the hospital gave rise to the idea of forming similar groups for alcoholics after discharge and for outpatients. At first there were not enough ex-patients to form such groups and there was no branch of Alcoholics Anonymous in our catchment area. Our hospital group was therefore used as a nucleus to form a new A.A. group at Croydon, which, with the help of the London service office of A.A., was started in November, 1952, and grew rapidly through the influx of non-hospital alcoholics from the district. All the Croydon A.A. meetings, as well as those of other A.A. branches in the neighbourhood, have since been regularly attended by our hospital patients. Two years ago they also formed their own A.A. group in the hospital, and they hold open meetings every Sunday evening. These meetings, as well as a Sunday afternoon meeting held by the social worker, give visiting relatives a chance to gain insight into the problem.

Former patients have a standing invitation to attend hospital group meetings after discharge, and to keep in touch with ex-patients who live in other parts of London. Monthly reunions have been held in London for over a year. Reports of these meetings are mailed regularly to all our alcoholic ex-patients, and have gradually expanded into a typewritten monthly magazine of 30–36 pages, now in its second year.

Treatment

Sobering-up, detoxication, and physical building-up are no more than preliminary stages in the treatment of alcoholism. Our long-term treatment programme for alcoholics is based on community living with other alcoholics, group therapy, close collaboration with A.A., the use in some cases of drugs—such as disulfiram ('Antabuse') and apomorphine—as auxiliary weapons, and keeping in contact with patients after discharge.

Community living and group therapy appear theoretically to be suitable means of treatment, for group activities seem to be a natural antithesis and antidote to personality traits often found in alcoholics, such as defiant individuality, grandiosity (Sillman 1948, Tiebout 1949), undersocialisation, and underparticipation in the activities of their surroundings (Bacon 1949). In a community and in groups formed by alcoholics who all speak the same language—enabling rapid identification with each other—each soon gets the feeling of belonging and learns to give up individualistic striving for the sake of sharing in the work for a common goal. Each helps others by trying to help himself, and he gets encouragement to drop his façade and to reveal and face his real self when he sees others do it. Often the alcoholic has been driven to drink because he felt unable to form human relationships without it; finally he has withdrawn more and more from society because of drink. Community living and group activities help him in the process of resocialisation.

In each patient alcoholism is probably due to several causes, and no single form of therapy is suitable for every patient. A combination of several therapeutic methods selected according to the needs of each patient seems to be the most promising way of treatment. Group therapy has been chosen here as the central line of approach, for it makes the patient himself an active participant and is carried out with, and to a large extent by, the patient himself and is not merely a therapy meted out to him.

The method used in the group discussions is in the main a form of eclectic psychotherapy based on dynamic concepts and a predominantly non-directive approach. Emotional reorientation and not mere intellectual understanding is the chief goal.

Meetings are attended by doctors, the hospital chaplain—spiritual subjects often crop up at group meetings of alcoholics—and social workers, but they may also be held when no members of the staff are present.

Aftercare

As the success of treatment of alcoholics rests largely on the standard of aftercare, we do our best to establish good contact and rapport with patients and their relatives before discharge, and to anchor the patient firmly in A.A. On an average 10 patients—unaccompanied by hospital staff—visited outside A.A. meetings twice a week for over two years, and only rarely did any of them absent himself for a drink. This may be partly due to the absence of responsibilities while in hospital, but is probably also due to the patients' acceptance of the code of their hospital group, whose ego-ideal is not to

TABLE I—RESULTS OF TREATMENT IN 94 CASES, ACCORDING TO SEX AND CIVIL STATUS

Civil status	Total	Recovered	Improved	Not improved	Unknown
Male:					
Single ..	15	6	2	5	2
Married ..	34	21	9	3	1
Separated ..	18	3	4	4	7
Divorced ..	3	1	1	—	1
Widowers ..	—	—	—	—	—
	70	31	16	12	11
Female:					
Single ..	1	—	—	—	1
Married ..	8	4	2	2	—
Separated ..	5	—	2	—	3
Divorced ..	6	2	2	2	—
Widowed ..	4	2	—	—	2
	24	8	6	4	6
Male and female:					
Single ..	16	6	2	5	3
Married ..	42	25	11	5	1
Separated ..	23	3	6	4	10
Divorced ..	9	3	3	2	1
Widowed ..	4	2	—	—	2
	94	39	22	16	17

* Abridged from a paper read before the Society for the Study of Addiction on Jan. 18, 1955.

drink. After discharge the alcoholic will again meet people who are social drinkers; and to counter-balance this influence, the importance of regular attendance at A.A. meetings and of maintaining contact with the hospital—through social workers, reunion meetings, the monthly magazine, &c.—is strongly impressed on our patients.

The Patients

During the last two and a half years 150 alcohol addicts—i.e., alcoholics showing loss of control over their alcohol intake (Jellinek 1952)—were admitted to the hospital as voluntary patients. Most of them were admitted because of social difficulties—e.g., continual loss of jobs or marital difficulties. All had been heavy drinkers for many years, and they were a rather hard core of alcoholics though on the whole not in bad physical shape. The ratio of males to females was 3·4/1, and most of them were in the age-group 41–50. The majority of the men were of relatively high intelligence and belonged to the upper occupational groups (I and II)

TABLE II—RESULTS OF TREATMENT IN 94 CASES: TYPES OF IMPROVEMENT IN 77 CASES WITH KNOWN PRESENT STATE

Sex	Present state unknown	Present state known	Improvement (out of 77 cases) in:				
			Drinking *	Work adjustment	Home adjustment	Social adjustment	Subjective feeling
Male	11	59	47	50	43	35	41
Female	6	18	14	8	16	11	11
Total	17	77	61	58	59	46	52

* Dry or one relapse.

(Registrar-General 1951). In several respects our patients are probably not a representative sample of alcoholics in this country.

Provisional Results

Alcoholism should not be considered to be "successfully arrested" until abstinence has continued for at least two years (W.H.O. Alcoholism Subcommittee 1951). Most of our patients have not been observed for as long as this. Tables I–IV can be no more than rough guides.

77 patients have been observed for periods ranging from six months to two years after discharge from hospital.† Of these 77, 39 had had no drink since discharge ("recovered"), and 22 had had no more than one relapse ("improved") (table I). These patients had also improved in other ways (table II). 16 had had more than one relapse since discharge ("not improved"), but most of these were drinking less than formerly and their behaviour and general attitude had improved.

In our material four factors seemed to affect prognosis: men did better than women (table I), married people better than unmarried (table I), older people better than young (table III), and non-psychopathic personalities much better than psychopaths (Henderson and Gillespie 1950). For psychopaths the prognosis is poor (table IV), though there is usually brief improvement. The smaller proportion of psychopaths in the older age-groups may largely explain the better prognosis of older alcoholics in our material. The identification in the mind of the public of alcoholics in general with alcoholic psychopaths is probably largely responsible for many misconceptions.

Discussion

Our alcoholic patients have been coöperative, easy to handle, and, by virtue of intelligence and initiative, an asset to the hospital. In setting up and running the group we have followed, not any preconceived plan, but a path of trial and error based on patients' reactions to any proposed changes and innovations. Despite the lack of planning and experience and the shortage of staff, the only major difficulty that has arisen is our inability to admit many alcoholics referred to us.

Similar schemes, based on close collaboration of the mental hospital with A.A. and on extensive group therapy, seem to deserve trial elsewhere. If alcoholic patients were gathered in a few selected hospitals in each region instead of being admitted haphazardly to any hospital, groups could be formed in the selected hospitals and later in their neighbourhoods. These, in time, would lead to the formation of new A.A. branches all over the country, and help to teach the public that alcoholism is an illness, lessen the stigma attached to it, and encourage patients to seek treatment earlier.

Many alcoholics can be helped by outpatient treatment or by A.A. alone, but for some admission to a mental hospital may be a beneficial step (Rees and Glatt 1954). It may make clear to the patient how far drink has taken him, induce in him a feeling of utter defeat, and lead to a "personality disruption" and ego deflation which may be essential for successful treatment (Sargant 1949, Williams 1950, Tiebout 1954). No alcoholic can recover without a sincere desire to give up drinking, and daily contact in hospital with other alcoholics undergoing group therapy may sometimes induce this desire even in patients who entered hospital only to please wife or employer.

Community living with other alcoholics rather than the official group-psychotherapy sessions seems to be responsible for the change of heart and attitude which relatives often notice after only a few weeks. This change of heart seems to begin more rapidly in men than in women, perhaps partly because the women are fewer and lack the opportunity of living in a community of alcoholics, though they attend the group meetings, which are "mixed." A mixed unit for alcoholics may therefore be of advantage; the feasibility of mixed units has been proved—e.g., in our unit for non-alcoholic neurotics (Martin, Glatt, and Weeks 1954). If patients could be admitted without statutory formalities (as in our neurosis unit) many alcoholics who are afraid of entering a mental hospital because of its stigma might find it easier to do so.

TABLE III—AGE-DISTRIBUTION OF RECOVERED AND IMPROVED MALE PATIENTS

Age (yr.)	Total	Improved or recovered	Not improved or unknown
21–35	10	4	6
36–50	38	25	13
51–66	22	18	4
Total	70	47	23

TABLE IV—RESULTS IN NON-PSYCHOPATHIC AND IN PSYCHOPATHIC MALE PATIENTS

Age (yr.)	No. of patients	Non-psychopaths					Psychopaths				
		Total	Recovered	Improved	Not improved	Not known	Total	Recovered	Improved	Not improved	Not known
21–30	4	1	1	—	—	—	3	—	1	2	—
31–35	6	3	—	1	1	1	3	1	—	1	1
36–40	11	6	1	3	1	1	5	—	2	1	2
41–45	18	15	11	3	1	—	3	—	1	1	1
46–50	9	6	2	1	—	3	3	—	1	1	1
51–60	19	16	12	3	1	—	3	—	—	2	1
61–70	3	3	3	—	—	—	—	—	—	—	—
Total	70	50	30	11	4	5	20	1	5	8	6

† In the six months since these tables were compiled there have been hardly any changes, so the figures hold good for an observation period of one to two and a half years.

Summary

A treatment centre for alcoholics at a public mental hospital, working in close collaboration with Alcoholics Anonymous, is described.

It is suggested that alcoholic patients should be admitted to a few selected hospitals in each region, where they could form a nucleus for new branches of Alcoholics Anonymous in the neighbourhood.

The establishment in mental hospitals of units for alcoholic patients—preferably of both sexes, with admission without statutory formalities—may prove useful for research as well as for treatment.

I wish to thank Dr. T. P. Rees, physician-superintendent of the hospital, for his encouragement and his advice; the staff for their continual support; our social worker, Miss C. Forrest, B.A., for her laborious follow-up work; and the London service office of A.A. for its keen coöperation.

REFERENCES

Bacon, S. D. (1949) *Quart. J. Stud. Alc.* **10**, 1.
Dent, J. Y. (1952) *Brit. J. Addict.* **49**, 33.
Glatt, M. M. (1955) *Ibid*, **52** (in the press).
Henderson, D., Gillespie, R. D. (1950) Textbook of Psychiatry. London; p. 388.
Jellinek, E. M. (1951) *Tech. Rep. World Hlth Org.* no. 42, pp. 20, 21.
— (1952) *Ibid*, no. 48, p. 27.
Martin, D. V., Glatt, M. M., Weeks, K. F. (1954) *J. ment. Sci.* **100**, 583.
Pullar-Strecker, H. (1952) *Brit. J. Addict.* **49**, 21.
— (1955) *Lancet*, i, 1072.
Rees, T. P., Glatt, M. M. (1954) *Ment. Hlth, Lond.* **14**, 11.
Registrar-General (1949–54) Statistical Review of England and Wales for successive years from 1948 to 1953. Part I. H.M. Stationery Office.
— (1951) Classification of Occupations, 1950. H.M. Stationery Office.
Sargant, W. (1949) *Proc. R. Soc. Med.* **42**, 367.
Sillman, L. S. (1948) *J. nerv. ment. Dis.* **107**, 127.
Tiebout, H. M. (1949) *Quart. J. Stud. Alc.* **10**, 48.
— (1954) *Ibid*, **15**, 610.
W.H.O. Expert Committee on Mental Health. (1951) *Tech. Rep. World Hlth Org.* no. 42, p. 8.
— (1952) *Ibid*, no. 48, p. 24.
Williams, L. (1950) *Brit. J. Addict.* **47**, 62.

A CENTRE FOR CEREBRAL-PALSIED CHILDREN

CHILDREN are the concern of a great many people—the Ministry of Health, the Ministry of Education, the local authorities, voluntary agencies interested in special aspects of their welfare, and of course their parents, to name only a few. To weld all these ministering angels into any kind of family party calls for resource and sagacity. In the case of the new Centre for Spastic Children at 61, Cheyne Walk, Chelsea, London, these qualities were evidently at hand, for what has been achieved is a pioneer project, unique of its kind: a voluntary centre launched within the National Health Service.

It combines a medical centre with a school for children under 5, the school being under the London County Council, and the medical centre under the Chelsea group of hospitals. Admiral J. H. Godfrey, who has been a moving spirit in founding the centre, is also chairman of the hospital management committee of this group; the centre's relations with its parent group are thus of the happiest. The National Health Service, in Admiral Godfrey's judgment, has three serious gaps in its provisions: for the very young, for the very old, and for pioneer projects. In starting a pioneer project for the very young he has had the satisfaction of helping to stop two gaps at once.

When the idea was first discussed, two and a half years ago, the South West Metropolitan Regional Hospital Board gave it their blessing—with a proviso that they were not to be asked to make any capital expenditure on it for three years. In the event the whole cost—with the exception of the teachers' salaries and the school equipment, which are covered by the London County Council—has been borne by many donors, among whom King Edward's Hospital Fund for London is the chief; the William Johnston Yapp Trust, the London Parochial Charities, and an anonymous donor have also been particularly generous.

The centre has its own medical committee consisting of Dr. Ian Anderson, honorary director of the centre, and consultant pædiatrician to the Westminster and St. Stephen's Hospitals, Dr. C. D. S. Agassiz, late physician-superintendent of Queen Mary's Hospital, Carshalton, Dr. Francis Bach, consultant in physical medicine to the Chelsea group, Dr. Anthony Feiling, consultant physician to St. George's Hospital and the National Hospital for Nervous Diseases, and Dr. John Foley, who is the consultant neurologist of the centre. Mr. Wylie McKissock, neurological surgeon to St. George's and the National Hospital for Nervous Diseases, and Sir Harry Platt, president of the Royal College of Surgeons, have joined the committee as cöopted members.

Dr. Foley holds sessions at the centre at which he diagnoses the children's cases and advises on treatment. His room at the centre is close to the records department and library, and next door to the filming room, in which permanent records can be made of the children's progress in walking and coördination. The library contains a comprehensive selection of books bearing on cerebral palsy, which have been given by an active league of friends of the centre. A file is also kept of all papers published on the subject, and it is hoped that this reference file will in time be so complete that it will be useful to all those working on cerebral palsy who care to consult it.

TREATMENT

The centre, which is housed on the ground floor of the Cheyne Hospital for Children, has many comely well-lighted rooms, and these have been decorated with charm and distinction. The white entrance hall, with its elegant thin touches of scarlet, lifts the spirits at once. Wherever there are stairs a small scarlet handrail runs alongside, set at a level within reach of a small child. The centre takes for the whole day cerebral-palsied children who are capable of benefiting by education in the school; and though it has only been open since the middle of April there are already 19 of them attending daily. The plan is to add others, one at a time, until there are 24 attending daily, though it may be possible to increase the actual numbers on the strength by arranging for one group to attend on Mondays, Wednesdays, and Fridays and a different group on Tuesdays and Thursdays. The number who can usefully attend daily is governed by the number of treatments that can be given: the two keen young physiotherapists on the staff find that 12 treatments each are as many as they can complete in a day. A few cerebral-palsied children who are not educable are being brought up daily for treatment of their physical condition. These, of course, do not attend the school, and indeed they are spoken of as "outpatients" to distinguish them from the school-children.

The physical-treatment room, warm, comfortable, and pleasantly gay, is equipped with two plinths and radiant-heat lamps. The physiotherapists have recently spent some weeks in Copenhagen studying Danish methods of treatment under Prof. Preben Plum at the Rigshospitalet. They make good use of ultraviolet light, hot and cold sprays, and massage, including vibration and shaking of the muscles. These simple methods, they find, improve the circulation in the blue limbs of these children, and help the muscles to relax.

A speech therapist attends twice a week and has her own treatment room where she can give speech training and take records of the children's speech for reference and comparison. The tape-recorder in her room has an extension in the corridor outside, so that those interested in a child's progress can listen without interrupting the session. They can also watch the child (without themselves being seen) through a darkened glass panel in the door.

EQUIPMENT

The well-made furniture of the classrooms and the children's dining-room is of a size to suit their age.

The centre has the services of a skilled hospital carpenter, a tall upstanding man of 75 who sees no reason for retiring, and who, besides making much of the furniture, carries out any adjustments needed to chairs and foot-rests, and executes, with beautiful fidelity, any new designs brought to him.

The wash-basins and water-closets in the children's lavatory are also on an appropriate scale, and there is a wooden chair-frame, with arms but no seat, which stands over the lavatory-pan and enables the child to pull himself up when he rises. The wash-basins have lever handles to the taps, which the children are able to turn on and off more easily than they are the screw type. Two competent house mothers look after the needs of the children, prepare them for treatment, and supervise meals.

At present there is only one large classroom, its glass doors opening on to a little tiled terrace where classes can be held on sunny days. The doors have been specially designed so that they will not shut-to of their own accord and perhaps trap fingers. An important piece of equipment in the school-room is the piano, for rhythmic games are useful in helping to establish control of muscles. Outside, in a pretty little garden, a new classroom is going up, modern in design with windows all along one side. The garden overlooks another garden—that of Chelsea Old Church, now rising again from its wartime ruins; and the keen gardeners among the congregation, who keep the church grounds in flower, are also going to lend a hand with the centre's garden. At the bottom of the building is a yard with a perambulator garage: but some ideas are already stirring about the centre's own van—or perhaps two vans—to be driven by volunteers, who would go round collecting the children in the morning and delivering them back at their own doors in the afternoon.

The most striking thing about this centre is its happy atmosphere. The affectionate kindness with which these intelligent handicapped children are treated and taught is a final expression of the whole spirit of the place.

REGIONAL HOSPITAL BOARDS AND BOARDS OF GOVERNORS OF TEACHING HOSPITALS

THE Minister of Health has reappointed the following as chairmen of boards:

Newcastle Regional Hospital Board.—Edward F. Collingwood, C.B.E., D.SC., J.P.
United Manchester Hospitals.—N. M. Agnew.
Bethlem Royal and Maudsley Hospitals.—Mrs. F. C. Ormerod.
Hospital for Diseases of the Chest.—Widdrington Stafford.
Queen Charlotte's and Chelsea Hospitals.—A. J. Espley, C.B.E., J.P.
The Hospital for Sick Children.—Claude A. Lucas, T.D., M.A., A.H.A.
Eastman Dental Hospital.—A. D. Page.

MEMBERS OF BOARDS OF GOVERNORS

The following doctors have been appointed to boards. They will hold office till March 31, 1958. New appointments are indicated with an asterisk.

St. Bartholomew's Hospital.—F. C. W. Capps, Sir James Paterson Ross.
London Hospital.—H. B. May, J. Stanley Thomas, Vernon Thompson, Eustace Hoare, Clifford Wilson.
Royal Free Hospital.—Geraldine Barry, G. E. Breen, D. H. Geffen, J. C. R. Hindenach, * J. S. F. Pollitzer.
University College Hospital.—Cecil Flemming, J. D. S. Flew, K. E. Harris, S. Cochrane Shanks.
Middlesex Hospital.—* W. R. Winterton.
Charing Cross Hospital.—Norman Lake, * A. Doyne Bell, * Lionel Taylor.
St. George's Hospital.—Sir Claude Frankau, Hugh Gainsborough, Alastair Hunter, D. Stark Murray, * H. H. D. Sutherland (till March 31, 1956).
Westminster Hospital.—F. D. Hart.
St. Mary's Hospital.—Joel Green, * J. W. Litchfield, * F. W. M. Pratt.
Guy's Hospital.—E. R. Boland, A. Talbot Rogers, E. G. Slesinger, * A. H. Douthwaite, * Grant Massie.
King's College Hospital.—F. S. Cooksey, Sir William Gilliatt, V. F. Hall, J. H. Peel.
St. Thomas's Hospital.—W. G. Barnard, J. Forest Smith, C. H. Vernon, R. H. O. B. Robinson, * R. W. Nevin.
Hammersmith, West London, and St. Mark's Hospitals.—John McMichael, Charles Newman, Maurice Shaw.
The Hospital for Sick Children.—A. P. Norman, Wilfrid Sheldon.
National Hospitals for Nervous Diseases.—Sir Francis Walshe, * Redvers Ironside, * Alan Kekwick.
Royal National Throat, Nose and Ear Hospital.—Adam Gray, C. Gill-Carey, * J. W. Cope.
Moorfields, Westminster and Central Eye Hospital.—R. C. Davenport, Sir Stewart Duke-Elder, * Cyril Shapland.
Bethlem Royal and Maudsley Hospitals.—Sir Allen Daley, D. L. Davies, A. Harris, Doris Odlum, F. R. Winton.
St. John's Hospital for Diseases of the Skin.—R. M. B. MacKenna, J. E. M. Wigley.
Hospitals for Diseases of the Chest.—Sir Clement Price Thomas, J. G. Scadding, J. Smart, * Sir Geoffrey Todd.
Royal National Orthopædic Hospital.—H. Jackson Burrows, John Cholmeley.
National Heart Hospital.—Graham Hayward, G. H. Jennings, P. H. Wood.
St. Peter's, St. Paul's, and St. Philip's Hospitals.—Clifford Morson, J. G. Sandrey.
Royal Marsden Hospital.—Sir Stanford Cade, D. W. Smithers, Alexander Haddow (till March 31, 1957), * W. A. Mill.
Queen Charlotte's and Chelsea Hospitals.—S. G. Clayton, Charles Read, * Humphrey Arthure (till March 31, 1957).
Eastman Dental Hospital.—Frank Wilkinson, * R. R. Stephens.

BIRTHDAY HONOURS

THE list appearing in our last issue omitted the names of two members of our profession on whom honours have been conferred. They are:

O.B.E (Military)

Wing-Commander LILIAN GERTRUDE MOORE, M.B. Belf., M.R.C.P.E., R.A.F.
Wing-Commander JAMES CLARKE TAYLOR, M.B. Glasg., R.A.F.

NEW MATERNITY HOSPITAL IN CARDIFF

THE steel skeleton of a new maternity hospital stood beside the Cardiff Royal Infirmary throughout the war years. On the outbreak of war in 1939 building was discontinued, and it was not until May of this year that the hospital admitted its first patients. The hospital, which is administered by the board of governors of the United Cardiff Hospitals, has its own matron and is a part-1 training-school for midwives.

Of the six floors the top two are devoted to nurses' quarters, but they have been so designed that they could readily be converted to take patients. On the ground floor are antenatal and baby clinics, X-ray department, lecture-theatre, demonstration room, library, kitchens, administrative offices, and the clinical research laboratories of the department of obstetrics of the Welsh National School of Medicine. The patients are accommodated on the remaining three floors. Each floor has 27 beds, and, apart from minor variations in the nursery arrangements, they form identical units consisting of delivery suite of two first-stage rooms and two delivery rooms, nurseries, five 4-bed bays, and seven single rooms. On one of the floors is a premature-baby unit, and on the same floor one of the delivery rooms is equipped as an operating-theatre.

The babies will ordinarily be nursed with their mothers, but there is enough nursery space to accommodate all the babies at night. Continuity of nursing care for the mother will be ensured by having the same staff in charge of antenatal beds, delivery room, lying-in beds, and nursery for normal babies. Anæsthetic gases are piped to the delivery rooms, and oxygen and suction points are provided in the wards. Sterile water is laid on, and elaborate antistatic precautions have been taken in constructing rooms in which anæsthetics may be given.

The new hospital is to be officially opened on July 12 by the Duchess of Kent.

The Widdicombe File

XXVI. THE HOUR OF THE ANGEL

DEAR CHARLES,

I'm exceedingly glad to hear you can take our rooms at Mrs. Woof's in August. Rooms on the Devon coast in August at six guineas a head are not to be sneezed at ever, and hers are worth double. She will look after you and the family admirably. Wychecombe Bay itself is overrun now by caravan camps (the hills around have been terraced for caravans till they look like the work of Ancient Britons in Somerset), but Wattecove a mile away is just as good, and deserted because it has no motor road.

Let me tell you though before you go, as an awful warning, of a thing which happened last year. Did you ever have to resuscitate the Apparently Drowned? I did, and it was not a pleasant experience.

It was, you remember, an August of lousy weather last year, and the day in question, though rainless and almost warm, boasted about five-eighths of an onshore gale. Beatrice and I, very much *en famille*, came over the cliff path into Wychecombe Bay towards lunch-time, intending to buy apples at the caravan-camp shop. As we came in sight of the beach we could see two most ominous-looking huddles of people at the water's edge. There was a man leaning over the end of a stone wall, watching them through field-glasses. "No, it's nothing," he said: "Rowing boat brought something ashore—fish, I expect." Reassured, we yet urged our litter a little faster downhill. Halfway down, five wasted minutes later, I began to doubt the diagnosis of the fool with the field-glasses, and soon was running as hard as I could across the wide wet sands. The two huddles meant two bodies, and they had been pulled out of the sea just before we caught sight of the beach.

There were a lot of people on the beach, and I had some difficulty in getting to the centre of the first knot. There lay there a heavily-built, thick-necked man of 40-odd. He lay on his face on the wet sand, with two towels and a raincoat over him but nothing under him. One of the rescuers was applying artificial respiration (Schafer's method, more or less) at about 60 to the minute. Seven others at least were rubbing his limbs violently. No-one was paying any attention to his airway. Two stout gentlemen were contesting who could shout "stand back, give him air" most importantly, though the close ring of onlookers was in fact our only shelter against the wind. There were all the makings of farce, except the happy ending.

He was pale and cold and bluish round the ears, but looked, to my inexpert eye, extremely alive. I said, loud as I could, "I'm a doctor. Who's in charge here?" The assembled company looked at each other, but admitted no leader. They looked then at me, and found in my ancient ski jacket, torn shorts, bare legs, broken sandshoes, and peeling nose little to reassure them. This, they thought, could hardly be a *proper* doctor. The feet nearest the patient's head were reluctantly moved away enough to allow me to kneel down by him. I felt a doubtful carotid pulse, manœuvred the head into a position rather more compatible with a free airway, and attempted to take stock. You must remember at this point that I had never dealt with drowning before, that my last clinical responsibilities had ended shortly after V.J.-day, that this case came out of the blue of a holiday which was family-ridden and rain-soaked but otherwise completely placid, and that I had only the moments of my run across the beach to recondition me to this most unfamiliar emergency. There were two problems: what to do, and how to get someone to do it while I went to look at the other body.

At this moment a heave in the crowd brought up a blank-faced young woman, with a chorus of "She's a nurse, doctor." She remained dumb, but took over the head with some appearance of knowing what she was doing. I exhorted the artificial respirator to slow down his rate, and told the nurse to keep him at it, and escaped, thankfully I'm afraid, to survey my second problem.

At the centre of the second huddle, in most respects just like the first, was a boy of 13 or so. His nose was nearly buried in the sand, and vigorous artificial respiration was being applied. All appearances to the contrary however, his airway was clear, and indeed as I turned his head the air could be heard bubbling quietly in the larynx with each heave of the resuscitator's body. The resuscitator was himself panting with his efforts, and I suggested he slowed down a little. This was received with no favour: clearly he considered that the harder he worked, the more good he must be doing. But I persuaded him to stop a moment while we got some towels under the body, and in that moment the body had the wit to produce a faint gasp of spontaneous respiration. We waited, breathless ourselves, for half a lifetime—thirty seconds I suppose—and it was repeated. Here at least was one success.

Obviously what he needed was assistance to deepen each spontaneous breath, and the two of us worked at the timing of it for a minute or two. It looked better and better. One would have supposed that our exhilaration would have equally possessed the onlookers. But no, survival was an anticlimax, and the circle was thinning. The wind whipped in again, and I wasted another minute or two in expostulation before anyone would hurry up the beach to speed the stretcher which it was vaguely assumed that someone was fetching. The huddle of bowed heads round the other body showed there was no such success yet in that quarter.

I elbowed my way back into the centre. The nurse had vanished—how or why I never discovered (she cannot, I think, have been a real nurse—perhaps a nurse-maid misidentified and too overwhelmed to disclaim it). There was a veiledly acrimonious dispute going on over the resuscitation roster ("Old man, you've had enough now, you're tired") and the rate was still around 60. The body looked much the same, but by contrast with the one I had just left looked much more dead than it had before. I could not feel the carotids. The resuscitators proved incorrigible in their adherence to an excessively rapid rate, and I decided (reluctantly, for it lost me my freedom of movement) to resolve their arguments by taking over myself. The body was cold and wet as I straddled it, and the fat muscular chest ominously stiff as I leaned forward on it with straight arms and ostentatious slowness. I had time at least, for the first time since reaching the beach, to begin to wonder where we went from here. The ring of staring faces remained as blankly unhelpful as the casual urban audience of a hole in the road. The tide began to lap round their ankles: we would soon, willy-nilly, have to move.

Blessedly at this point the matter was taken out of my hands. Simultaneously there arrived the local G.P., a St. John's man, and the police. The police (sixteen stones of him) brought a van and a stretcher, the St. John's man experience of these affairs beyond mine, and the G.P. not only knowledge and experience but the dress, bearing, and bag of a real doctor.

After that all went as it should in the books, and there's not much point in continuing. The boy was soon mended, the man proved to be beyond recall. Harry Hawke did the

P.M. for the coroner, and the coroner told us how unwise it is to bathe in even the safest of West Country bays when the tide is low and the wind high. And that was that. Perhaps the three prosperous little caravan camps who live on the bay have provided a stretcher between them this year and got one of their staff trained in resuscitation, or perhaps they've forgotten. It might be an idea if you inquired—tactfully.

For myself, I am still more than a little harrowed by the memory. Probably what I thought was a carotid pulse when I first saw the man was an illusion—my own rapid pulse from running, even a transmitted pulse from the persistent massage school on the legs. But I will never be certain, and never be quite certain that we could not have saved him.

That damned ignorant staring helpless crowd still haunts me

> I know not whether I am proud
> But this I know, I hate that crowd.

Not one man or woman, in that sample of 200 or so of the prosperous lower middle classes of England, knew a thing about first aid for the drowning beyond the barest motions of Schafer's method. No-one had any notion of organising the crowd and assuming some sort of responsibility. One wartime sergeant of gunners remembering something of his authority, and a few fuglemen to give a lead in following him, would have made all the difference. By the time I arrived on the scene the mob was lost, disheartened, convinced of its own futility and the futility of any further effort, passively panic-stricken.

Not that I'm very happy about my own part in the affair. I did most of the right things (barring the Holger-Neilsen, which I didn't know at all), but I had to work them out from first principles, and wasted time and thought getting started on them. I neither looked like a doctor nor acted with the instantaneous decision expected of one, and lost the moment of confidence in which I might have imposed myself on the mob as the needed boss.

You and I, Charles, have retired, so far as our jobs are concerned, from the life-and-death responsibilities of clinical medicine into our laboratories. We may have major decisions to make, but we make them quietly in our own place and almost in our own time. We do not have to make them with a thumb on the artery in the theatre, or blanching under the stench of vomit in a crowded basement bedroom. We keep our side of the bargain; we work under laboratory conditions, and we accept the responsibility for producing results of a laboratory standard of accuracy. But outside our working hours, at the roadside, or on holiday by hill or river or sea, the accident catches us unawares, without our defensive armour of forms and bottles and reports, housemen and secretaries and technicians, and we are plain doctors again, with a life nakedly in our hands to save or lose. It is Ithuriel's hour—

> "... the test
> Of our sole unbacked competence and power
> Up to the limits of our years and dower
> Of judgment—or beyond."

I don't seem to have come out of my hour with the angel more than middling. It boils down to this though: the gift of confident authority comes of knowing what to do. There are occasions when even the illusion of knowledge is better than nothing at all: I know that if ever again I encounter a similar situation I will blow out my chest, screw up my courage, tick off the biggest man in sight at once, and act, not merely the good doctor, but people's idea of how a good doctor should act. But it's much easier if one knows what one's up to.

Do you know as much first aid as a moderately good St. John's man, Charles? Disgracefully few pathologists do. Come to think of it, 50% of the profession are probably just as bad. We like to be called "Doctor" we accept our little perks like the occasional chemist's discount, no jury duty, and side wards in hospital for us and our families: we do not even question the G.M.C.'s view that the man who qualifies must already be capable of the basic responsibilities of a doctor. But emergency not so rarely shows us barely worthy of our honourable title.

You'll enjoy Mrs. Woof's, Charles. But read up a few first-aid manuals before you go, and make sure you know the Holger-Neilsen. I need hardly say I have.

Yours,

PETER DAVEY.

PS.—I've just seen an excellent little book from New Zealand called *Artificial Respiration* by T. O. Garland (Faber & Faber, 6*s.* 6*d.*)—the best I know of so far.

Public Health

Uses of Radioactive Waste

WORK on radioactive waste in the United States and at Harwell suggests that many medical and industrial uses can be found for it, and a new research group has been established at Harwell to investigate the possibilities.[1]

One line of research will deal with the preservation of food by exposing it to irradiation from waste. It is possible that the widespread use of radiation sterilisation may reduce, or perhaps even abolish, the need for refrigeration to keep food fresh. For example, the Royal Navy is already being supplied from Harwell with potatoes that have been treated so that they will not sprout. In America it has been found that when meat is irradiated so that it keeps indefinitely, it has a different taste—though the taste is normal if the meat is only partly treated to preserve it for shorter periods. Full-scale experiments will begin at Harwell this year, and it is hoped to solve the problem of taste within two years. Dr. H. Seligman, head of the isotopes division at Harwell, has said that the main concentration of British food experiments may consist of attempts to improve the "shelf-life" of food rather than to preserve it indefinitely; tomatoes, for example, can be made to last fifteen days on a shelf before going squashy, rather than five days as now. It will also be possible to treat food before it is packed.

Radiation from waste can also be used to speed up chemical processes, such as the preparation of gammexane; and there are many possibilities in the manufacture of expensive drugs, such as hormones. The sterilisation of pharmaceuticals is another application, and this will be particularly valuable where heat cannot be used, as with penicillin and streptomycin. As for radiotherapy, the most successful fission product seems to be cæsium 137, and radiation from large sources of cæsium may turn out to be the most satisfactory method of radiotherapy so far evolved.

In industrial processes, it has been found that irradiation makes 'Polythene' more resistant to heat, so that cables can be used at higher ratings and temperatures. Vulcanising processes can be speeded up, and the application of irradiation in oil refining is being further investigated.

Poliomyelitis in Barnsley

There have been 22 confirmed cases of poliomyelitis in the Barnsley area of Yorkshire. The medical officer of Health, Dr. G. A. W. Neill, has said that the outbreak is not a serious one,[2] but the usual administrative precautions have been taken, including the stopping in schools of pursuits likely to cause physical fatigue.

1. *Times*, June 15, 1955.
2. *Manchester Guardian*, June 20, 1955.

Parliament

Future of the Social Services

THE fourth day of the debate on the Address (June 14) was reserved for a discussion of the social services. Dr. EDITH SUMMERSKILL opened the debate by regretting that the Queen's Speech contained not one word on the sick and the aged. She went on to ask the Minister of Health how many new beds would be provided this year for our mental hospitals, how he proposed to recruit extra staff for these hospitals and the sanatoriums, and to provide, through the local authorities, home helps and halfway homes for old people.

She also regretted that the recommendations of the Gowers report were apparently to be so tardily implemented. The Gracious Speech announced that a Bill was to be introduced on the health, welfare, and safety of those employed in agriculture and forestry, but no mention was made of workers in shops and offices and on the railways. Turning to the services under the Ministry of Pensions, Dr. Summerskill declared that the pigeon-holing of the Phillips report was not only discourteous to a distinguished committee but showed a callous disregard for the needs of the aged. She also asked whether the proposed extension of family allowances would include children at all colleges, and also mentally retarded children who remained dependent on their parents.

Mr. OSBERT PEAKE, Minister of Pensions and National Insurance, defended the priority given to the Bill for the protection of workers in agriculture and forestry on the grounds that these industries were becoming ever more mechanised and the accident-rates had risen. If there were time a Bill dealing with safety and health on the railways would also be presented. The Bill dealing with shops and offices would be much the biggest. Almost certainly it would be impossible to introduce it in the first session. The Government had in mind that the age-limit for family allowances should be 18. After all, the scheme was in respect of children, and to go on counting people as children after they had qualified for National Service would seem to be going rather far. Some provision would be made for handicapped children.

As a result of the changes recently made in the pensions scales of benefit, he continued, about 111,000 fewer people were drawing assistance today than 2½ years ago. There was every sign that we could look forward to a steady reduction, and he believed that we might approach the Beveridge idea of a society in which the means test was hardly ever exercised. Much had already been done to rebuild our social services. The value of pensions and benefits, which 3½ years ago had steadily fallen, was now fully restored and provided better purchasing power than ever before. There was still much to do. In the first session of this new Parliament the main emphasis would be on education and housing, but the Government believed that, given freedom from industrial disputes, given a reasonably steady cost of living and increased productivity, the beneficiaries of the social services could look forward to a better future.

Miss EDITH PITT thought that we were getting good value for the £463 million we spent on the health service, but she believed that we could get even better value if we concentrated on preventive work. She would like to see more emphasis on the use of the family doctor. Since the 1953 award he was better paid, but he still had too little time to pay full attention to every member of the family. Sir FREDERICK MESSER was troubled because we seemed to be separating health from welfare, and this in his view was a big mistake. The lack of integration was particularly marked in the welfare of the aged.

Mr. J. K. VAUGHAN-MORGAN saw an increase in domiciliary services as a first line of defence in health, and he hoped that the reform of local government forecast in the Gracious Speech would include some means of closer association between the local authorities and the health services. He recalled that when the Ministry of Health was founded in 1919 it was given the positive duty of "promoting the health of the people." Since then its powers had been whittled away until its main preoccupation was curing ill health rather than preventing it. Many of its duties had been reshuffled to the Ministry of Local Government and Housing. He would like to see the industrial health services transferred to the Ministry of Health. The expected report of the Guillebaud Committee and the promised reform of local government would, in his view, give us a chance to rebuild the National Health Service on a sounder basis.

PAYING FOR SECURITY

Miss ELAINE BURTON suggested that in this century we had established the principle that the community must provide social services for its citizens. In the years to come she hoped that we would develop the services with the aim that they should be given to a citizen as a right, without test of means. To achieve this money could be provided in three ways: by graduated contributions, by a social security tax, or out of general taxation. In her view it was wrong in this modern age that social services should be paid for by all citizens at the same rate, irrespective of what they earn.

Mr. DOUGLAS HOUGHTON also examined the basic aims of social security today. Are we prepared, he asked, any longer to think of Beveridge minimum subsistence pensions? Were we not to think now in bolder terms of the construction of a cost-of-living index for old people. The standard pension for married couples was now only a third of the average wage. That was not adequate social provision for retirement. We must, he suggested, look at our scheme of social security more as a national superannuation scheme than as an insurance scheme.

Mr. JAMES GRIFFITHS described the flat-rate contribution as "the most aggressive tax we have." The only person who now paid the full insurance contribution was the one who did not earn enough to pay income tax. Unless a fundamental change was made in our system of social insurance, National Assistance would become increasingly, not a residual service, but an integral part of our welfare system.

THE MINISTER'S REPLY

Mr. IAIN MACLEOD, the Minister of Health, pointed out that the Queen's Speech covered only one aspect of the programme which the Government had outlined in their policy statement. Of the subjects affecting his Ministry the only promise of legislation was for medical auxiliaries. He did not think it was likely that that legislation would be ready for this session, although considerable progress had been made.

Schemes already approved and in current building programmes for England and Wales would provide 7000 new mental-deficiency beds and there were under consideration schemes which would provide at least another 2000. 1000 extra beds had been provided in mental hospitals since 1948. Beyond that, 3000 had been approved in the current programme and proposals for another 500 were being considered. The staff deficiency on the mental side might be estimated at about 10,000, though the nursing staff as a whole had been slightly increasing year by year. The home-help service had gone up from 11,000 at the end of 1948 to over 33,000 at the end of 1954. In the last year 62% of the cases looked after by home helps were classified as chronic sick. There was no absolute duty under the National Health Service Acts to provide this service, but all local authorities provided it. Some time this year—probably in the autumn—the Government would receive a report from the Guillebaud Committee. The review and any reconstruction in the National Health Service that would follow would be carried out by the present Government.

The social services ought now to be breaking clear of their teething troubles. It should be possible to find some principles which should guide them in the period ahead. First, he thought that increasingly responsibility should go where the work was done. That would mean of course a trend in responsibility downwards, and this was one of the matters which were being considered by the Ministers concerned with local government. Secondly, he thought they should try to bind together more closely in comradeship the voluntary and the State services.

They should try to get leagues of friends increasingly active in the hospitals, and the hospitals should be more open than they were now. People should begin to feel that they owned the hospitals. The third and last principle was that they should try to encourage diversity in the social services. In the health service people should not be prevented from buying privacy for themselves or their families when they were ill. He did not believe that any single pattern could cover the range of the social services, and it was therefore of great importance that they should encourage independence in every possible way. Finally, it had to be remembered that the social services had to be earned and paid for by the prosperity of the country, they were not a gift of Government.

QUESTION TIME

Poliomyelitis Research in Scotland

Replying to a question, Mr. JAMES STUART, secretary of State for Scotland, said that the Scottish Hospital Endowments Research Trust had accepted the first application for financial assistance for research into poliomyelitis and other virus diseases. This consisted of a grant of £3000 to meet the cost of equipment which would be required shortly in the new virus laboratory at Ruchill Hospital, Glasgow.

Crash Helmets

Mr. BARNETT JANNER asked the Chancellor of the Exchequer whether he would consider taking steps to remove purchase tax from crash helmets, in view of the recent recommendation of the British Medical Association and the fact that some £4½ million a year is involved in treating people in hospitals who are unable to afford to buy this article.—Mr. R. A. BUTLER replied: This is a matter which I have considered very carefully in view of the representations made to me. But I am not yet convinced that motor cyclists are deterred from using these articles by the few shillings tax involved. Mr. JANNER: Is not the Minister aware that some 1300 deaths a year are caused by these helmets not being worn? Even if the persons themselves are not prepared to purchase the helmets, does he not think it the duty of the State to afford facilities for these helmets to be used?—Mr. BUTLER: I hope that people will wear these helmets, but I am not at present in a position to remove the tax.

Sir FRANK MEDLICOTT: Will the Minister bear in mind that purchase tax was originally imposed partly to discourage people from buying things? Is it not time that we removed this particular discouragement from this very valuable and life-saving article?—Mr. BUTLER: There are other forms of important protective clothing which are still taxed, and I am afraid that I cannot go further in my answer today.

Myxomatosis

Replying to a question, Mr. HEATHCOAT AMORY, Minister of Agriculture, said that his department had examined surviving rabbits from many parts of the country, and of these, 39—or about 10%—were found to have acquired immunity to myxomatosis. It was not, however, possible to say whether this proportion was representative for the country as a whole. Mr. SOMERVILLE HASTINGS: Is there any evidence that this immunity is carried to the next generation?—Mr. AMORY: I understand not, except possibly for the first few weeks of a young rabbit's life.

Heroin Addiction

Replying to a question, Major GWILYM LLOYD-GEORGE, Home Secretary, said: 52 heroin addicts are known in England and Wales and 2 in Scotland. At the present time there are no persons in respect of whom addiction is suspected but not proved. Drug addiction is not compulsorily notifiable in this country but I have no ground for thinking that there is any substantial hidden addiction. From Jan. 1, 1950, to date, 23 persons were convicted in respect of 24 offences involving heroin, one person having been convicted twice. Of these 23 persons, 15 are known heroin addicts and 1 person, who has since left the country, was suspected to be addicted to the drug.

Prices of Drugs

Replying to a question, Mr. IAIN MACLEOD said that since May, 1953, of the 73 most expensive and frequently prescribed proprietary preparations, 29 had been reduced in price (many between 20% and 50%), some of these reductions reflecting in part reductions in the basic drug prices. In addition, special provisional reductions, ranging up to 20%, were recently arranged with manufacturers in the prices of 19 proprietary preparations. During the same period the prices of certain important basic drugs and their corresponding products had been reduced, some of them several times. These voluntary reductions included some recent ones (since June, 1954), ranging up to 20%, in the prices of penicillin, streptomycin, chloramphenicol, and hormone and vitamin products.

Poliomyelitis Vaccine

Replying to a question, Mr. MACLEOD said that a member of the staff of the Medical Research Council had just returned from a visit to the United States, where he had been studying the latest developments regarding anti-poliomyelitis vaccine. No explanation for the Cutter vaccine incident had yet been found, but it was possible that certain batches contained live virus. He understood that the safety tests to be applied to the vaccine in the United States had been greatly multiplied, including a closer control of manufacturing processes. Pending the introduction and application of similar measures here, the Medical Research Council had postponed the start of any field trials. This would probably involve a postponement until the late autumn of this year.

A Doctor and the Rail Strike

Mr. JAMES BAIRD asked the Minister of Health what position under the National Health Service was held by the doctor who declined to see one of his patients, the wife of a railway striker, until the strike was over.—Mr. MACLEOD replied that the doctor was a part-time consultant to the board of governors of the United Birmingham Hospitals and to the Birmingham Regional Hospital Board.

Mr. BAIRD: Was the doctor's action not completely unethical, and did it not amount to political discrimination? Will the Minister see either that the doctor changes his principles, or that his name is withdrawn from the National Health Services list?—Mr. MACLEOD: If there were any question of breach of contract within the National Health Service, it would be a matter for which I would be glad to answer, but if it is a question of medical etiquette, which the hon. member seems to raise, that is not for me, nor is the matter of a private arrangement which a doctor might make with his private patient. Mr. BAIRD: Is it not a fact that this doctor says that his principles do not allow him to see these people? Surely his principles must operate in the National Health Service as a whole and what he is saying is that he will never see a patient on strike?—Mr. MACLEOD: Equally there is a matter of principle involved in my reply. I cannot reply on matters for which there is no Ministerial responsibility at all, and that, I am afraid, is the case in this regard.

Criminal Offences by Mental Defectives

Mr. KENNETH ROBINSON asked the Minister of Health why, under circular H.M.(55)46, he required the police to be informed of sexual acts by certified mental defectives, in addition to the normal report to the Board of Control; whether he was aware that medical superintendents had been informed by his department that such reports to the police were still discretionary; and if he would revert to the earlier procedure by withdrawing the circular.—Mr. MACLEOD replied: The circular was issued after consultation with the Home Secretary because the earlier procedure, which had only been in force since 1951, did not have sufficient regard to the duty of the police to investigate criminal offences. The circular advises but does not require cases to be reported to the police. I am aware of no good reasons for its withdrawal.

Mr. ROBINSON: Surely the Minister is not suggesting that the police should prosecute in cases like this? Is it not a fact that the old arrangements have been working quite satisfactorily? Why does the Minister want to place this additional burden on medical superintendents?—Mr. MACLEOD: There are certain cases which, by the 1913 Act, are in effect criminal offences which come within the terms of the circular. We are getting back to the practice which operated before 1951. This is a matter of doctor-patient relationship, and the final decision of whether the police should be notified is left to the medical superintendent.

In England Now

A Running Commentary by Peripatetic Correspondents

FOR the past five weeks I have been lying in bed healing a duodenal ulcer. For most of the time I have been in my bed at home looking out on what is to me one of the pleasantest views in England. The foreground is a field, with cows in it, sloping gently to the village a quarter of a mile away. The village is—just an English village. It is not one of the show places, and no circular tours call there; but it has a nice old church, just in the right place, and houses of every period living happily together. There is a little river at the foot of the hill and the back-cloth is a low range of tree-covered hills. It all looks as though it had been there a very long time.

While I have been in bed the scene has shed its winter mantle and put on its early summer one. At first the trees were bare and at the end they were clothed in the lush green of summer in the West Country.

Then I developed a small complication and the friend who was looking after me decided that I must go into hospital for a short course of treatment; nothing drastic but something with plenty of needles in it.

The hospital has a long and honourable tradition, and like our village it has just growed over the years. My guest-room is tucked away in a small building in the back yard of the main one—called, rather inappropriately, the "Cottage"—and the rest of the back yard is filled with a hotchpotch of buildings of every shape and size which epitomise the history of medicine in the last two hundred years or so. I am afraid that, unlike our village, they are not beautiful. The "Cottage" is one of the early ones and was built as an isolation block at a time when it must have been badly needed. Its internal decoration is Doulton unadorned, with glazed white tiles from floor to ceiling, and it must have been the pride and joy of some long-dead apostle of hygiene. However, between me and the hideous back of the "new" X-ray department there is a garden. It is none of your sooty urban flower-beds, but a real garden, with a real tree, in which the birds sing just as sweetly as they do in my garden at home. When I admired it Sister said "Oh, but you should have seen it last week when the tulips were at their best." Sooner or later I expect the cottage will be pulled down to make room for the new department for cosmic ray treatment or some such. I hope that the "cottage" garden will not have to go too.

* * *

I cannot honestly say that I appreciate the modern composers or the twelve-tone system which the pundits talk about. However, I confess that I was rather put out by the cat the other day. She was sitting quietly washing herself when suddenly she perked up at the sound of Hindemith. She strolled over to the radio, quite casually, and sat down to listen until the end of the concert piece and then returned to her basket and her toilet. It is disconcerting to be outclassed by one's own cat. I now blush at my staple diet of Mozart and Beethoven.

Have you ever noticed how little difference there is between babies and small animals? My cat's love of Hindemith reminds me of a friend's experience lately. He and his wife had moved temporarily into a hotel, taking with them nothing but the bare essentials and, of course, the baby. The child, aged eighteen months, was completely frustrated all day and most of the night. It defied three grains of chloral. It became semi-comatosed on five grains only to awaken two hours later as noisy and as troublesome as ever. And all because it missed its music. It was happy only while stamping around the floor or beating the side of the cot with a metal spoon in time with the music. My friend had to bring the family radiogram to the hotel. The latest report from the distracted father was that anyway it showed a growing appreciation of Bach.

Now this you will realise was no mean feat. In a matter of months this child had completed what the experts aptly call "the musical pilgrimage" which (they say) starts with Chopin and Liszt and ends with Bach. Surely in this day and age with Three Blind Mice, Little Bo-peep, later with Men of Harlech, later still with the Lord High Executioner, we are handing out inferior stuff for the all-impressionable, all-embracing minds of our offspring. The time has come when Listen with Mater should be Listen to Mahler. By five years of age our children will surely be ready to benefit by The Exposition of the Fugue for Five-year Olds, the Contrapuntal Element in the Classics for Children, or even Tchaikovsky for Toddlers.

* * *

What Samuel Pepys called his "House of Office"—which was a source of offence between him and his neighbours—was in my boyhood called a "W.C." The term indicated the change in domestic life wrought by the introduction of an abundant piped water-supply and the disappearance of the well. A water, as opposed to an earth, closet was something of a novelty—such as "H and C" is occasionally today. Victorian England refined the water-closet into the "W.C.," though in rather unsophisticated circles—as it seemed to me, across this span of time—the rather *démodé* word "closet" was sometimes used alone. In family circles the "W.C." was apt to be abbreviated to the "W." The insidious ingression of Americanisms (is it not indelicate to talk of the breast of a chicken; and does not your hostess ask you if you prefer a "limb" or "the chest"?—unless maybe the deep-frozen animal is now purveyed in "portions") ousted the "W.C.," abetted in this by material progress, and gave us the "lavatory" which today has become the "toilet." International air-travel has guilded this sophistication and air hostesses tell us that "the ladies' powder room is at the back of the plane on the right hand side" (meaning on the starboard side aft). Our Georgian ancestors, or some of them, had "powder closets," and it is a nice speculation whether the "powder room" will revert to the old form, and full circle bring us back to the "closet." But terminology advances along strange paths, so that in a recent visit to the Western Hemisphere all I could find offered for man's, or woman's, need were "rest rooms." I didn't want to rest and, finding no alternative label, vaguely wondered if in some obscure annexe of that doubtless commodious apartment there might be the facilities required. I entered, and found merely a W.C.! *Plus ça change.* . . .

* * *

She was a motherly old body, but her symptoms seemed to be functional, so the psychiatrist's aid was sought. He interviewed her in the ward side-room, and some time later the sister asked her how she had got on. She had apparently enjoyed her chat, had thought the doctor was a nice young man, but was sorry to find him so restless, and smoking so many cigarettes one after the other. She really felt it would do him good to see one of these psychiatrists about whom she had heard so much.

* * *

A new typist and a nodding consultant informed me in the discharge letter that old Mrs. Claypole "had lived for several months on bread and butter and Global Salts." The new treatment for *Weltschmerz*, no doubt?

* * *

CHILD GUIDANCE

Be strict in teaching cleanly habits but to see
Evolving an obsessional personality;
Be lax and you may live to curse
Enuresis or worse.

Chastising for each misdemeanour surely bends
The character in sadomasochistic trends;
Never punish and impress
A selfish lawlessness.

Exhibit deep concern and dote unceasingly
To make the child fixated in a high degree;
Deny all love and note oft-times
Delinquencies and crimes.

Perhaps the very ancient Chinese wisdom lends
Some help to our debating analytic friends:
Always avoid extremist zest,
The golden mean is best.

Letters to the Editor

QUARANTINE MEASURES IN POLIOMYELITIS

SIR,—Might I be allowed to congratulate the medical officer of health and the general practitioners concerned on the results of their quarantine measures in the outbreak of acute poliomyelitis reported in the article by Dr. Goffe and Miss Parfitt in your issue of June 4. Only one further case developed, and the summer outbreak, which we have learnt to fear following the occurrence of winter cases in an area, did not occur.

I should also like to congratulate Dr. Goffe and Miss Parfitt on their confirmation of the high incidence of infection in the contacts of the 4 cases of acute poliomyelitis (8 out of 17 household contacts, and 1 child in the village school attended by 3 of the contacts, were excreting the same type of poliomyelitis virus in their stools). It is on this concentration of virus round the frank case that the justification for the inconvenience of quarantine of contacts depends.

While welcoming the findings of these laboratory workers, however, one must question their interpretation of them. So far from being satisfied with the success of the quarantine measures, they write: "Quarantine measures applied in this community did not prevent the spread of infection" and "infection was widely disseminated in the community." Since the disease failed to spread and no attempt was made to study individuals who were not either direct or indirect contacts, it is difficult to see on what they base these conclusions; surely not on the finding on two occasions (January and March) out of four (February and May) of virus of the same type (type I) in town sewage draining other houses than the cases'? The relation between virus in sewage and acute poliomyelitis above ground is at best a very loose one—indeed, as they point out, type-II virus had been isolated from the same sewage on two occasions in the previous year without accompanying disease above ground—and such findings can hardly be regarded as convincing evidence of widespread dissemination.

What really appears to have worried these workers was that their infected contacts continued to excrete virus in their fæces beyond the recommended period of quarantine. "Quarantine," they write, "seems to be of doubtful value *in practice* if, at the end of three weeks, three-quarters of the infected members are to be returned to the community still carrying virus" (my italics). They mean, of course, that its value is doubtful *in theory*, or more accurately, *in their theory*. *In practice* it is of value, and there is a perfectly good theory to explain this—namely, that "infectivity" and "fæcal infection" are not synonymous. It is after all only against infectivity that quarantine restrictions are aimed, and there is ample epidemiological evidence that, at any rate in countries with adequate disposal of sewage, the period of infectivity corresponds not with the known prolonged period of fæcal carriage of the virus (three months is the figure given by the expert committee of the World Health Organisation which Dr. Goffe and Miss Parfitt quote), but with the very much shorter period of pharyngeal carriage.

Had these workers studied virus in the pharynx instead of virus in the fæces they would have understood why, in both practice and theory, quarantine need be enforced only for three weeks following contact, as recommended by both the Ministry of Health and the World Health Organisation. Had they gone further and correlated the findings of virus in the pharynx with the level of antibody in the blood, they *might* have shown us a reliable means of distinguishing contacts who, because they still carry virus in their pharynx, are dangerous to the community, from their fellows who, while excreting it in their fæces, are past the dangerous stage of pharyngeal carriage.

Is it too much to hope that they will study this aspect in the next outbreak which comes to their notice, so that we can have the advantages of quarantine, and at the same time inconvenience as few contacts as possible for as short a time as possible?

Nuffield Orthopædic Centre, Oxford. MARGARET AGERHOLM.

COMPLICATIONS OF CHLORPROMAZINE THERAPY

SIR,—In their valuable article in your issue of June 4 Dr. Lomas and his colleagues state that epileptic fits occurred in 10 of their 800 patients. They do not give the frequency or number of fits, but they say that the occurrence of fits is regarded as a contra-indication to chlorpromazine. Since chlorpromazine has been in use at this hospital, epileptic fits have occurred in 3 patients. 1 of these patients had had a leucotomy, but had never had an epileptic fit before. 1 patient had only had one epileptic fit eight years previously, while the 3rd had never had an epileptic fit in the ordinary way but had had six seizures during a course of insulin-coma therapy.

These patients were investigated electro-encephalographically after the fits. The first 2 patients had normal records. The 3rd showed an unstable alpha rhythm in the resting record. There were no changes on flicker stimulation, but overbreathing caused some runs of 5 per second, generalised activity, and also bilateral sharp-wave discharges, especially anteriorly.

These 3 patients were then given 50 mg. of chlorpromazine intravenously, the E.E.G. again recorded, and the response to flicker and overbreathing observed. There was no change. These patients have continued to take chlorpromazine without a recurrence of their fits. We believe that the fits might have been due to the fact that when the patients were placed on chlorpromazine the barbiturate on which they had been previously was withdrawn.

At this hospital we have also carried out a series of daily direct eosinophil-counts, and all patients, with one exception, appear to have shown a significant fall after the institution of chlorpromazine therapy, instead of the occasional rise observed by Dr. Lomas and his colleagues. Collateral tests designed to measure possible effects of chlorpromazine therapy on ketosteroid levels and water metabolism have been inconclusive.

Hill End Hospital, St. Albans. I. A. SAMAD.

CHILDREN IN HOSPITAL

SIR,—I have read with interest your commentary (May 28) on Dr. Mary Capes's World Health Organisation report on this subject.

It seems to be generally accepted that a child should not be admitted to hospital unnecessarily, in view of the risk of emotional damage involved. With our present-day facilities, however, it often is essential to admit a child to hospital, but if a method could be devised of taking hospital facilities to the child in his own home, it should be possible to nurse at home many children who at the moment would be judged to be requiring hospital care.

Thinking along these lines, the idea for a domiciliary pædiatric service has occurred to me, involving the following main features:

(1) A domiciliary visiting team, which would consist, probably, of consultant, registrar, resident, and sister. It would undertake the care of sick children at home. It would visit daily, or oftener if necessary, and be on call at all times. It would undertake the same investigations, treatment, and research projects as it would if the patients were in hospital instead of their own homes.

(2) A special van or ambulance in which the team would travel. It would be furnished with equipment to perform investigations and treatments, such as blood-counts, X-ray examination, blood-transfusion, and paracentesis. Some procedures such as lumbar puncture could be performed inside

it if the home conditions were unsuitable. It would also be available at all times and be equipped with radio for easy contact in an emergency.

(3) A staff of pædiatric nurses, under the charge of the sister. They would care for the children, perhaps working on a shift system. A very ill child, or one on special treatment such as intravenous-drip therapy, would require twenty-four-hour attendance; several less ill children would be cared for by one nurse. The child's mother would assist the nurse as far as possible, and gradually take over from her as the child recovered.

The service, which would be based on the local children's hospital or ward, would be called in by the general practitioner confronted by a case which he would normally send to hospital. He would resume responsibility for the case as soon as the child's condition warranted it.

This scheme is intended for medical cases, but its use might facilitate the earlier discharge of surgical cases.

It is a purely tentative scheme, which is no doubt capable of much modification and improvement. Nevertheless, I feel that by its use many children could be spared the potentially traumatising experience of separation from their mothers at a time when they are least able to tolerate it.

Edinburgh. JANET HAZELL.

CANCER RESEARCH

SIR,—It was startling to read Dr. Burnet's letter of May 21 and his protest against the present methods of cancer research. To abandon experimental methods in favour of bedside observation and to use the money saved to build hospitals would block the sources of all progress and knowledge. It is false to maintain that research has "proved absolutely fruitless." The clinical picture of cancer is well known and there is nothing to be added to textbook descriptions. But experimental work is of the greatest importance: I need refer only to the great many discovered carcinogens (about 700) and their effect.

The research of the last fifty years has yielded remarkable results, though I must admit that the practice of therapy is hobbling behind in comparison with the theory. We are surely now at a stage where success is written with sympathetic chalk on the blackboard over which the lucky scientist will one day wipe a sponge. Patience and assiduity are necessary. Experiments on animals cannot be avoided, because every progress in our field comes from the laboratory.

Düsseldorf. TH. OLBERT.

HYPERSENSITIVITY ANGIITIS

SIR,—We were most interested to read Dr. Rose's comments in your issue of June 18. It seems to us, however, that to attribute a condition such as polyarteritis to drug sensitivity, or to any cause, is not a matter susceptible to proof until sufficient observations have been recorded to be the subject of statistical analysis. More frequently, indeed, opinion comes to be a matter of the most reasonable probability in the light of collected experience; this being a justification, Sir, for the recording of single cases.

In our patient, it seemed more reasonable to us to accept a relationship between the various and at times dramatic manifestations of drug sensitivity, and the simultaneous exacerbations of the polyarteritis which eventually proved fatal, than to postulate that the polyarteritis, of whatever ætiology, was progressing quite independently.

Satisfactory as Dr. Rose's personal experience of cortisone treatment of over 40 cases of polyarteritis (mostly through the Medical Research Council) has been, this has clearly not been the case with our patient, nor with those of other authors quoted by us.

J. R. EDGE
S. FAZLULLAH
J. WARD.

North Lonsdale Hospital, Barrow-in-Furness.

MENTAL RETARDATION

SIR,—The second footnote to Dr. Alford's article (June 18) may give rise to confusion. The article does appear to deal also with the lower grades of mental deficiency, as in the remark "when a child is born who is obviously mentally defective. . . ." A child recognised to be mentally defective at birth is unlikely later to be in the "educationally subnormal" category.

The present distinction between educationally subnormal and ineducable does, I feel, affect adversely the parents of the ineducable, and serves no useful purpose. The statutory notification of the ineducable to the local health authority labels the children unnecessarily. Surely the most humane and logical procedure would be to retain such children in the school system, by making education authorities responsible for occupation centres. Support is given to this suggestion by the recent approval of the Ministries of Health and Education to the application of the term "teacher" to staffs of occupation centres. A circular letter from the National Association for Mental Health, dated June 13, 1955, quotes a remark of an officer of the Ministry of Education: "it appears to be increasingly recognised that there is no essential difference between education and training."

Admittedly some of the lowest grades of mentally handicapped children require institutional care, but admission to hospital should be possible without legal procedure. Amendment of the law relating to mental health—now under consideration—should abolish the artificial line of demarcation between educable and ineducable children, with resulting advantage to the mental health of the parents of the latter.

Health Department, Southampton. W. P. CARGILL
Deputy Medical Officer of Health.

DIGITAL ARTERIES IN RAYNAUD'S DISEASE

SIR,—I have read with great interest the article by Mr. Lynn and his colleagues (March 5), particularly as its appearance was almost simultaneous with that of a paper of my own on the same subject.[1] If the term "Raynaud's phenomenon" is restricted to patients in whom (*a*) there is no discernible primary disease and (*b*) there is no evidence of arterial occlusion, at least in the early stages, I have found, in this country, that "Raynaud's disease" accounts for only a minority of instances of "Raynaud's phenomenon." Among the latter, there is a group of patients with clinical evidence of structural occlusion of digital arteries and arteriographic features of the kind described by Mr. Lynn and his colleagues.

I would criticise their suggestion that the term "thrombotic digital-artery disease" should be used in these cases. This is unjustifiable in the absence of histological evidence that thrombosis is the usual mechanism of the occlusion. I had used a similar term until one of my patients died a few months following clinical evidence of digital arterial occlusion: the arteries of the hand were dissected and the digital arteries (communis and propria) were found to be occluded not by thrombus, but by intimal proliferation. Since then I have been content to say "digital-artery occlusion, cause unknown."

Like Mr. Lynn and his colleagues, I have found sympathectomy disappointing in these patients. In fact, it sometimes seemed to make the condition worse. However, I do not think that arteriography is essential to distinguish structural from functional occlusion of digital arteries. This can readily be done by an arterial-occlusion reactive-hyperæmia test performed in the manner described by Lewis and Pickering.[2] In normal persons and those with functional arterial block, the fingers flush to their tips in less than five seconds after the release of the occluding cuff on the arm. In those with blocked

1. *Med. J. Aust.* March 26, 1955, p. 455.
2. Lewis, T., Pickering, G. W. *Clin. Sci.* 1933, **1**, 327.

digital arteries there is a definite delay in flushing of the affected fingers. The findings from this test correlate very well with those of arteriography.

Baker Medical Research Institute,
Alfred Hospital,
Melbourne, Australia. A. J. BARNETT.

EFFECT OF HYDERGINE ON UTERINE ACTION

SIR,—The article by Professor Jeffcoate and Mr. Wilson in your issue of June 11 raises once again the important question of the ethical justification of using normal healthy patients as experimental "material." One gathers that in this case 59 patients in perfectly normal labour were given intramuscular injections of 'Hydergine' and another normal group of 5 were given it intravenously. They were already having routine injections of morphine and pethidine and were in no sense in need of further treatment. The hydergine was administered solely for the scientific purpose of determining its effect upon the uterus, and, in a few cases, of ascertaining if it had the effect of neutralising oxytocin given by intravenous drip.

In 2 of the cases "the treatment seemed to cause a considerable increase in the amount of pain," and in another group "6 women whose pain was increased had to be given pethidine intravenously." The conclusions drawn from the tocographic records made in a number of cases were that hydergine can induce hypertonus, but "that its oxytocic action is not so strong *or dangerous* as that of dihydro-ergotamine . . ." (my italics).

There can surely be no question but that the giving of the drug involved some risk, however slight, and the question therefore arises, how many of us would permit our own wives to be subjected to this kind of experiment and, secondly, were the wives and their husbands fully informed as to the nature of the tests and permission obtained in these cases. I feel that, to clear up any possible misunderstanding, some explanation on the part of the authors would be welcomed.

Camberley, Surrey. M. BEDDOW BAYLY.

*** Dr. Bayly's letter has been shown to Professor Jeffcoate and Mr. Wilson, whose reply follows.—ED. L.

SIR,—We agree that those undertaking "clinical research" have a duty to avoid experiments which are unnecessary to the treatment of the individual patient and which carry risk of injury or discomfort. It is doubtful where to draw the line and it could be argued that some of the routine tests carried out everywhere daily as part of the investigation of many patients are strictly unnecessary or that it is culpable ever to try out a new pattern of obstetric forceps. Sometimes, however, there is a clear need to weigh carefully the claims of advancing knowledge against the interests of the individual, and the decision to embark on a particular research project can be difficult, and its propriety a matter of opinion. Such issues could be debated at length but they are not strictly relevant to our work with 'Hydergine,' about which there appears to be some misunderstanding in the mind of Dr. Bayly.

We were not experimenting in the accepted sense of the word but merely administering a substance which, in recent years, has achieved a wide reputation for giving a woman a speedier and more comfortable labour. Thus hydergine and allied compounds are, or have been, given routinely to parturient women in certain clinics in this and other countries, and even within this last week we, and we assume other members of the medical profession, have received yet another postal advertisement extolling their virtues and advocating their use. We therefore applied what can be described as an accepted line of treatment designed to help the patient, and the only "test" was an attempt to control treatment by withholding it from certain women (for which it might be more reasonable to blame us), and by recording uterine action with our external tocograph which is scientifically unsatisfactory but has the merits of depriving the patient of the risks and discomforts which accompany other methods which have a stronger appeal to the experimentalist.

Our finding that hydergine appeared to intensify rather than relieve the pain of labour in certain cases was opposite to what was expected, and contrary to the claims of other observers. Moreover, our observations that hydergine and dihydro-ergotamine are potentially dangerous arise *as a result* of this and similar clinical studies and were previously unsuspected. In fact, however, there is no evidence that any mother or baby in our series suffered harm from their use, and the discovery of their potential dangers under conditions which guaranteed safety may help to avoid their being used harmfully under other conditions.

In short, we gave to a woman in labour a substance which medical opinion assured us was of value to the individual and free from risk. The fact that our experience did not substantiate this opinion is merely an example of an ever-recurring situation in which the early exponents of a new method tend to be prejudiced in its favour by enthusiasm, whereas subsequent workers uncover disadvantages not previously appreciated.

T. N. A. JEFFCOATE
Liverpool. J. K. WILSON.

A BARBITURATE ANTAGONIST

SIR,—I agree with Professor Shaw and Mr. McCallum (June 11) that there is some evidence that phenobarbitone is at least partly broken down in the body. My main reason for believing that any such breakdown products do not contribute significantly to blood-phenobarbitone levels estimated by ultraviolet spectrophotometry is that I have identified phenobarbitone by paper chromatography in 5-ml. samples of blood taken from patients as long as ten days after ingestion of the drug. On the other hand, I have not been able to demonstrate by this method the presence of spots in any other position than that occupied by phenobarbitone. It is unlikely on theoretical grounds that breakdown products would travel on paper chromatograms at the same rate as the parent substance.

A further point is that the rate of disappearance of phenobarbitone from blood is slower, but of the same order, as that of barbitone. It is generally agreed that barbitone is stable in the human body.

Professor Shaw and Mr. McCallum do not agree that "the worth of new barbiturate antagonists can be evaluated by a measurement of drug levels in the blood." They add that "the only test is the pragmatic one of a lessening of the duration of coma and the mortality-rate."

In the light of these statements I have studied with great interest the recent paper by Professor Shaw and his colleagues.[1] The case-notes show that ββ-methylethyl glutarimide (NP13) and 2 : 4-Diamino-5-phenylthiazole hydrobromide or hydrochloride (D.A.P.T.) do indeed have analeptic activity, especially where short-acting barbiturates are concerned. But in 10 cases of prolonged coma (9 of which were due entirely or in part to phenobarbitone) the authors appear to have been unable to restore consciousness without risk of inducing convulsions. In 7 cases for whom the amount of phenobarbitone ingested is recorded, my calculations (which assume a body-weight of ten stone in each case) lead to the conclusion that only 2 (cases 18 and 21) regained consciousness earlier than might be expected without analeptic therapy—i.e., blood-phenobarbitone level above about 5 mg. per 100 ml. During the period of coma these patients are said to have been maintained in the "safe

1. Shulman, A., Shaw, F. H., Cass, N. M., Whyte, H. M. *Brit. med. J.* May 21, 1955, p. 1238.

state "—but how safe is a state bordering on convulsions? This is a question which those familiar with the effects of picrotoxin have asked for many years.

The specificity of a barbiturate antagonist should be proved in cases of poisoning due to the long-acting barbiturates for, in my opinion, prolonged coma in such patients is usually due entirely to the presence in the body of unchanged barbiturate (unless such breakdown products as may occur are also biologically active) and not to the effects of shock and anoxia.

The London Hospital, E.1. J. T. WRIGHT.

TEACHING DEAF CHILDREN

SIR,—As pointed out by Mrs. Ingall in your issue of June 11, there seems still to be a certain amount of confused thought about the stage at which special education of the young deaf child should commence. It cannot be sufficiently stressed that early lip-reading training and the use of any available hearing should start *as soon as the diagnosis is made*. Moreover, this diagnosis must be made at the earliest possible moment after birth, or after the child has suffered from any illness which has produced damage to the hearing mechanisms.

On the other hand, the 1944 Education Act should not be regarded as an educational textbook. Section 34 of this Act lays down merely that handicapped children may be "ascertained" at the age of two and can be afforded facilities for special education from that age if the local education authority thinks fit. Since the diagnosis of congenital deafness can be made in the otherwise normal child in the majority of cases by the age of twelve months, and is often made by their mothers long before this, the work of a number of hospital clinics and local health authorities with these patients is gratifyingly on the increase.

The tendency to postpone a decision about the disability arises from the misconception that the necessary training for these young children involves admission to a special residential school. This is completely inaccurate, for where the home conditions are suitable the parents can give more help by home training under the guidance of a teacher of the deaf than can be given to the child in a nursery school. It is more economical of teaching man-power and avoids the psychological consequences to the child due to its removal from the sense of security provided by home and parents.

Eye, Ear and Throat Hospital,
Murivance, Shrewsbury. E. N. OWEN.

FOOD IN MENTAL HOSPITALS

SIR,—Having devoted a considerable time to nutritional studies in a mental hospital during the past few years, I greatly welcome Mr. Harington Hawes's article of June 11. Most of us will agree with his criticism of present-day catering arrangements, and especially the long wait between the early meagre supper and next morning's breakfast.

There are several aspects which can be raised in discussing food in mental institutions. Our data gained in a hospital with over 2500 beds are being evaluated at present and no ultimate conclusions can be drawn yet. It can, however, be said that (at least in the hospital in question) the overall nutritional state of the patients was satisfactory and frank nutritional deficiencies were only rarely found, although some of the patients had been in hospital for several decades. Indeed some of the worst acute deficiencies were found in newly admitted patients.

Our preliminary publications[1] demonstrated low carotenoid values and low vitamin-A and vitamin-C reserves among the hospital population, and I therefore would support Mrs. Pulvertaft's suggestion (June 18) of spending any additional available funds on fruit, salads, milk, and cheese. The detailed results of our studies will be published shortly.

London, W.1. Z. A. LEITNER.

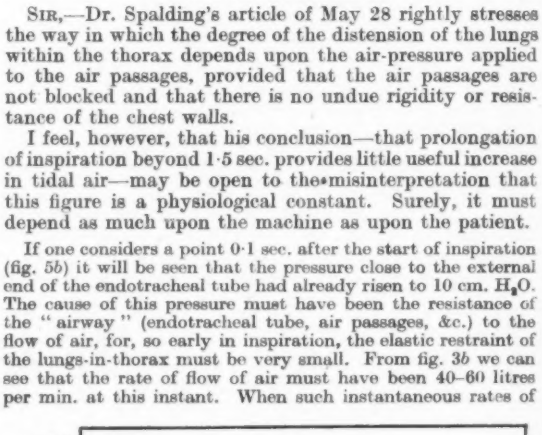
1. Leitner, Z. A. *Brit. J. Nutr.* 1952, **6**, viii. Leitner, Z. A. Moore, T., Sharman, I. M. *Ibid*, p. x; *Ibid*, 1954, **13**, xi.

ARTIFICIAL RESPIRATION BY INTERMITTENT POSITIVE PRESSURE

SIR,—Dr. Spalding's article of May 28 rightly stresses the way in which the degree of the distension of the lungs within the thorax depends upon the air-pressure applied to the air passages, provided that the air passages are not blocked and that there is no undue rigidity or resistance of the chest walls.

I feel, however, that his conclusion—that prolongation of inspiration beyond 1·5 sec. provides little useful increase in tidal air—may be open to the misinterpretation that this figure is a physiological constant. Surely, it must depend as much upon the machine as upon the patient.

If one considers a point 0·1 sec. after the start of inspiration (fig. 5*b*) it will be seen that the pressure close to the external end of the endotracheal tube had already risen to 10 cm. H_2O. The cause of this pressure must have been the resistance of the "airway" (endotracheal tube, air passages, &c.) to the flow of air, for, so early in inspiration, the elastic restraint of the lungs-in-thorax must be very small. From fig. 3*b* we can see that the rate of flow of air must have been 40–60 litres per min. at this instant. When such instantaneous rates of



Two sample inspirations using a respirator set to change to expiration at above 13 cm. H_2O.

flow are available, it is not surprising that a respectable tidal volume can be fed into the lungs in 1·5 sec. or even less.

Dr. Spalding's machine evidently had the very good characteristic of being able to supply 40–60 litres per min. against 10 cm. H_2O back-pressure, even when set so that its maximum pressure could not exceed 15 cm. H_2O. Unfortunately, many respirators are not so good and when they cannot provide air flow so freely it is surely no longer true that prolongation of inspiration beyond 1·5 sec. provides little useful increase in tidal air.

The accompanying figure shows flow diagrams of two sample inspirations using a pressure-sensitive respirator set to cut off and change to expiration at about 13 cm. H_2O. The lower traces are of the pressure near to the external end of the endotracheal tube. In flow tracing *a*, air flowed into the lungs at about 60 litres per min. at the start of inspiration and continued at about this rate until 0·8 sec. later when (from the area of the trace) about 700 ml. tidal volume had been insufflated and the pressure due to distension of the lungs amounted to 13 cm. H_2O, so that inflation ceased. In tracing *b*, in order to simulate many less satisfactory respirators, the maximum flow was restricted to about 35 litres per min. At the end of 2 sec., air was still flowing in at about 30 litres per min. but since (from the area of the trace) some 750 ml. had been insufflated, the distension of the lungs had resulted in a pressure of 13 cm. H_2O and inspiration ceased. In the latter case, useful tidal air was obviously being added at 1·5 sec. and beyond.

Even more exaggerated effects can be shown but I wished to work within practical limits. There is a respirator on the market which cannot deliver air faster than 15 litres per min.

The pressure curves corresponding to the flow diagrams are very different from any Dr. Spalding shows. This

must have been because the resistance of the "airway" was less in my patient than in Dr. Spalding's. Again, if we consider a point 0·1 sec. after the beginning of inspiration, air was flowing through the airway at 65 litres per min., but the pressure driving it was only 3 cm. H_2O. Such possible variation in the airway resistance in healthy people is surely another reason why Dr. Spalding's figure must not be misinterpreted as being a physiological constant.

I agree with Dr. Spalding that it is desirable that inspiration should be as short as possible and, to this end, the respirator should be able to feed in a lot of air quickly.

The practical limit to the speed of inflow at the beginning of inspiration will be the resistance of the airway and the highest pressure which is considered permissible at the external end of the endotracheal tube. For a given peak or cut-off pressure, respirators vary a good deal in their ability to deliver big flows against back-pressure.

Dr. Spalding rightly underlines the importance of the short inspiratory phase in maintaining a low mean intrathoracic pressure and thus avoiding embarrassment to the circulation. It is worth mentioning that this end can also be served very effectively by applying suction during the expiratory phase.

Royal Victoria Infirmary, Newcastle upon Tyne. E. A. PASK.

PERIODIC SYNDROME

SIR,—With reference to Dr. Reimann's letter last week on cyclical vomiting, his work on recurrent neutropenia is well known. With Dr. C. T. de Berardinis he has described [1] the condition, and similar cases have been seen in this country.[2] Early in my research I thought that I had met with some myself. The patients had recurrent pyrexia, abdominal pain, and neutropenia. Some of them had arthritis and splenomegaly. However, the work of Barrett and Rickards [3] led me to suppose that they may have been suffering from brucellosis despite negative agglutination tests. Dalrymple-Champneys [4] has pointed out that this condition may last for as long as forty years. It is most important in such cases to perform a brucellin skin test, and to determine whether this provokes a rise in titre of agglutination.

Bath. HUGH R. E. WALLIS.

TREATMENT OF CHRONIC AMŒBIC DYSENTERY

SIR,—I have read the article by Lieut.-Colonel Inder Singh (March 12) and the subsequent correspondence (March 26 and June 11) with interest, but I have been struck by the complete absence of any mention of clinical findings. It has always struck me that the essential difference between amœbiasis, a disease, and amœbic infestation, a harmless parasitism, is that in the former there is always a massive invasion of the gut wall, which is easily detectable clinically by a gross thickening and tenderness of the cæcum and colon. If this is present, whatever the stool findings may be, a course of systemic amœbicides must be given, which, if there is any liver tenderness on percussion, should include chloroquine.

I wish it were possible to believe, as Dr. Andrade (June 11) implies, that one cannot contract the disease from one's own harmless infestation. It seems to me more likely that the parasite, after ingestion, is forced to feed on the less favourable pabulum of bacteria because of a high host resistance; if, however, this becomes lowered there is an immediate widespread penetration into the gut tissues by the amœba, in whatever form it may be multiplying at the time. For this reason, I think that if cysts are found, without evidence of the disease, they are best killed, and a week's course of one of the bisarsenates usually seems adequate for this purpose. For those in whom attacks of the disease are common—i.e., those with a low natural resistance—it would seem that a prophylactic amœbicide should be possible, and I am now trying a combined tablet of bisarsenate with chloroquine, two twice weekly.

I believe that as the clinical diagnosis of this disease is comparatively easy, too much attention need not be paid to the stool findings, the difficulties of which have already attracted a wide literature.[5]

Calcutta. ROGER LANE.

HEROIN

SIR,—Following the letter from Mr. Southwood in your issue of June 11 deploring the action of the Government regarding heroin, you add an editorial annotation in which you refer, in perhaps a somewhat misleading manner, to the report of the representative meeting of the British Medical Association in the same issue. Would it not have given a fairer view of the question to have stated that the meeting passed a resolution protesting against, and asking for a reversal of, the ban on the manufacture and use (but not the export) of heroin?

Moreover, the same representative meeting passed a resolution wishing it to be made known that the B.M.A. had not been consulted or asked for an expression of its views in any way on the question of the abolition of the manufacture and use of heroin.

Nor was the question of a ban on heroin referred to the Royal College of Physicians. Had it been, there is little doubt that a majority of fellows would have given advice quite different from that tendered by the Central Health Services Council, which certainly cannot be regarded as representative of those in active medical practice.

Incidentally had you, Sir, read the letter in *The Times* of May 18 from members of the staff of University College Hospital Medical School, it would have been obvious that any action taken in this country could have no effect on heroin addiction, in this country or elsewhere.

London, S.E.1. J. J. CONYBEARE.

*** An editorial on this subject appears on p. 1311—ED. L.

STERILISATION OF BLANKETS

SIR,—The paper by Dr. Blowers and Dr. Wallace in your issue of June 18, as evidence of interest in the sterilisation of hospital blankets, is very welcome. Contrary to the opinion expressed in this paper, 'Fixanol C' has not an unpleasant odour, does not stain the blankets, and it does dissolve in water—perhaps not easily, but sufficient to give a dilute solution, which is all that is necessary. We were the first to recommend the use of 'Lissapol' to remove traces of soap from blankets to be treated and to act as a cleansing agent to replace soap. As Dr. Blowers and Dr. Wallace state, soap antagonises the bactericidal effects of quaternary ammonium compounds: we also mentioned this effect in our paper in your columns last year.[6]

St. Margaret's Hospital, Epping, Essex. FRANK MARSH.

ANTI-HISTAMINES AS HYPNOTICS

SIR,—To depart completely from the basic technique of the trials described in your annotation of May 7, might it not be much more conclusive to carry out tests, for hypnotic action, in the subject who *wishes* to be wakeful? That is, in any normal person (the nearer normal the better) during the day, while at work.

I suggest that the omission of breakfast, and the substitution of the top dose of any anti-histamine drug with a reputation for marked soporific side-action, will leave the investigator in no doubts whatever as to its activity in this direction. Placebos could be included in such tests, the preoccupation with work mitigating any purely psychogenic response.

1. *Blood*, 1949, **4**, 1109.
2. Moncrieff, A. *Arch. Dis. Childh.* 1951, **26**, 438.
3. Barrett, G. M., Rickards, A. G. *Quart. J. Med.* 1953, **22**, 23.
4. Dalrymple-Champneys, W. *Lancet*, 1950, i, 429.
5. Lane, R. *J. trop. Med.* 1951, **54**, 198.
6. Marsh, F., Rodway, H. E. *Lancet*, 1954, i, 125.

If it is wished to place the trials on a scientific basis, then experimental subjects could perform standard tasks for evaluation by independent observers; here it might be desirable to add a drug of known hypnotic value, for purposes of qualitative comparison.

Port Elizabeth, South Africa. R. E. HOLMES.

BY ANY OTHER NAME

SIR,—I am a philatelist and therefore interested in the details of printing processes. In order to elucidate the problems which arise it is often necessary to gaze at some thousands of copies of the same stamp. Here I am faced with the same sort of problems (mentioned in your leader last week) that beset the chest radiologist. I am looking for minute flaws, sometimes obscured by postmarks. He is looking for similar defects sometimes obscured by rib shadows, &c.

The great difficulty is to focus both mind and eye on each part of the stamp or film in turn. This is very tiring and one tends to overlook the areas in which flaws are less common and to miss them altogether where the design is complex. Moreover, the mind looks for the usual type of flaw and is apt to miss the unusual.

I am not sure what the remedy should be. I think one should have the normal in mind—which will happen after looking at 100 or so films or stamps—and should then strive to focus in turn up one side of a stamp or film, down the middle, and up the other side. But I still have much the same error-rate as the radiologist.

Sevenoaks, Kent. GORDON WARD.

SWEETS AND DENTAL CARIES

SIR,—Once again the medical profession is fighting a (? losing) battle against vested interests.

Cigarette manufacturers won the fight against prevention of bronchial carcinoma, and now sweet manufacturers are considering how further to increase their enormous sale of sweets, which is already the highest per head in the world.

One only has to live near a sweet-shop, and watch children coming and going there all hours of the day, to realise how hopeless the fight is for prevention of dental caries.

Unless there is an active press campaign, assisted by explanatory talks by dental officers in schools and clinics, and medical practitioners in surgeries, homes, and elsewhere, pointing out the danger of sucking lollipops, toffees, and suchlike, the number of dental casualties will go up and up.

What about a high purchase-tax on "dangerous" sweets?

Nottingham. G. FIELDING.

DANGEROUS COTS

SIR,—I have a certain amount of sympathy with the views of the cot manufacturers which you criticise in your annotation of June 18. Those who work in children's hospitals will agree with me when I say that only eternal vigilance can prevent accidents. If not watched children will pour soup over themselves, eat their coloured pencils, push buttons up their nose, and undo their bandages. I know of one fever hospital where the superintendent gave instructions that cot sides must not be put up because when children climb over them (and they do!) they have so much further to fall. At another, no restrainers are allowed because some years ago a child was killed by getting entangled in one. Narrowing the distance between bars may prevent one type of accident, but accidents are not caused so much by faulty equipment as by the restlessness of children exploring their world with great determination and little sense. They need conscientious nurses to watch them whatever type of bed they are in.

There is a further point I should like to make. Our toddlers' ward at present houses 20 children between three and five, none of whom could be squeezed through the bars of his cot in the manner you describe and most of whom wear, in addition, plaster jackets or various types of splint. Yet, I am told, the Ministry circular leaves our administrative staff no choice but to change our present cots for new ones at the expense of several hundred pounds. To issue a circular calling attention to the danger of one type of child in one type of cot is one thing; to issue instructions altering every cot in every hospital in the country quite another.

King Edward VII Orthopædic Hospital, Sheffield, 6. E. G. HERZOG, Surgeon-Superintendent.

SIR,—I suggest that if the bars were placed horizontally the accidents could not occur.

London, W.1. HAROLD KISCH.

*** But would the child stay in the cot?—ED.L.

Obituary

DONALD BREADALBANE BLACKLOCK
C.M.G., M.D. Edin., D.P.H., D.T.M.

FROM 1929 until he retired in 1945, Dr. Blacklock filled with distinction professorial chairs at the Liverpool School of Tropical Medicine. But he was never content to direct operations on the tropical front, and he continued, on arduous tours to unhealthy spots, his service for those who work in tropical climates.

He was born in 1879 at Oban, the son of the Rev. John Blacklock. From Fettes College he went to the University of Edinburgh, where he played forward for the Edinburgh Wanderers and cricket for the university. After he qualified in 1902 he practised for a few years in South Africa, but on his first leave home he met Warrington Yorke, then a research assistant at the Liverpool School of Tropical Medicine's laboratory at Runcorn. From this chance meeting there grew a close friendship and scientific partnership, for Blacklock was so fascinated by the work he saw at Runcorn that he threw up his promising South African practice to join the staff of the school. In 1907 he took the D.P.H., in 1909 the M.D., and in 1911 the D.T.M. The same year he was appointed research assistant at Runcorn, and he continued to work there until 1914, when he was appointed director of the laboratory and later lecturer in parasitology to the school. During these years he produced some twenty papers on trypanosomiasis, most of them in his own name but some in joint authorship with Warrington Yorke. One of these papers recorded the important discovery that *Trypanosoma cruzi* could develop to the infective stage in the bed-bug. But most of his published work dealt with the morphology of trypanosomes and, particularly, with the discovery of posterior nuclear forms of *T. rhodesiense*.

In 1914 Blacklock and Warrington Yorke, with the school's 32nd expedition, visited West Africa to arrange for the site of the Sir Alfred Lewis Jones Research Laboratory. While in Sierra Leone they studied the breeding-places of *Glossina palpalis* and the species of trypanosomes transmitted by the fly to man and his domestic stock. By the time the expedition returned to England war with Germany had broken out, and Blacklock joined the R.A.M.C., to serve in the Dardanelles and France until 1916, when he returned to look after tropical cases at the school, which had been converted into a hospital. While he was stationed at home he went on with his research and he collaborated with Stephens, Yorke, and other colleagues in papers on the treatment of malaria. These papers, though now obsolete, were, at the time of their publication, highly important, for they showed the Army authorities how best to control this disease which so greatly interfered with operations in the field. With Warrington Yorke he also studied the periodicity of the microfilaria of *Wuchereria bancrofti*.

In 1921, when the Sir Alfred Lewis Jones Research Laboratory was opened by the Liverpool School at Freetown, the University of Liverpool appointed Blacklock director of the laboratory and professor of tropical diseases of Africa. During the next eight years, while

he established the laboratory on a firm footing, he surveyed the diseases of Sierra Leone on behalf of the government, and directed important research, much of which was achieved only by travelling up country under primitive and trying conditions.

His investigation of an outbreak of beri-beri in the Freetown jail proved the cause to be the faulty preparation of the rice, a discovery which eliminated this long-standing cause of sickness in the prisons. During a tour in the northern province of Sierra Leone he observed that in this area a high proportion of cases of goitre were associated with heavy fæcal contamination of the drinking-water. In entomology his main interest was the breeding-places of the local anophelines, and as a result of his investigations anti-malarial measures in Freetown and its environs were put on a more scientific basis. He also collaborated with his wife, Dr. Mary Blacklock, in a comprehensive study of the tumbu fly. In the course of this investigation he observed evidence of resistance developed by the host against this parasite, and with Prof. R. M. Gordon he published papers on this aspect of metazoan immunity. His contributions to protozoology included his studies on malaria in the chimpanzee, and, again with Professor Gordon, on placental malaria. In helminthology Blacklock added much to our knowledge of West African schistosomiasis, and completed, in 1927, the proof that *Onchocerca volvulus* was transmitted to man by *Simulium damnosum* —a pioneer investigation which, for the first time, allowed methods of control to be applied to a disease which has been a widespread cause of blindness both in West Africa and in Central America. He was also interested in that strange disease, blackwater fever, and he showed that the transfer of blood from the patient to a normal person did not reproduce the infection. Those who knew Blacklock will correctly surmise that this somewhat risky experiment was performed on himself, and a colleague recalls appreciatively that he had the discrimination to choose a bishop as his donor.

In 1929 he returned to Liverpool to succeed Warrington Yorke in the Walter Myers chair of parasitology, which he held until 1934, when he was appointed to the newly established chair of tropical hygiene. But though this chair was now in England, much of his work still lay abroad. In 1935 with a Leverhulme fellowship he visited China, Malaya, Burma, India, and Ceylon to study the techniques of rural hygiene used in the tropics, while his wife, who held a similar fellowship, made a special study of the health of the women and children. Housing in relation to tropical disease was another subject which interested him and he was a member of the Colonial Housing Research Group.

During the late war, Freetown was a great convoy centre for war-time shipping and it was vitally essential that this base should be in constant use. Unfortunately the mosquito proved an even more formidable foe than the enemy: the crews and the troops on board the ships at anchor in the harbour, as well as the men stationed on shore, were exposed to the bites of mosquitoes and became infected with malaria to an extent which threatened to disorganise the whole convoy system. In this crisis the authorities approached the Liverpool School of Tropical Medicine, and Blacklock, now nearly 65, with the rank of surgeon captain R.N.V.R. sailed again to the discomforts of West Africa. The success of his work there was soon shown by the fall in the sickness-rate which followed the adoption of his recommendations, and in 1942 he was appointed C.M.G. Besides this well-earned honour he also enjoyed the rare distinction of having served his country with the rank of captain in the Army in one war, and captain in the Navy in the next. In 1944, at the request of the Government, he again visited West Africa.

Blacklock's clear and incisive mind made him an excellent lecturer, and the many editions of his *Guide to Human Parasitology*, written with T. Southwell, bear witness to his powers as a teacher. In 1945 he retired from his chair, after serving the Liverpool School for thirty-four years, and retired to Cornwall. He died on June 10 at his home at Mawnan.

R. M. G. writes: "Blacklock's acknowledged position as a leader in tropical medicine was not the result of personal ambition, for he was the most modest and least self-seeking of men; rather was he carried to the forefront of scientific research on the tide of his own discoveries, and in his advance he brought with him many younger and less experienced colleagues. There are today a host of workers in tropical medicine who owe their positions to the early training they received from him, for he had the power not only of imparting knowledge but of inspiring enthusiasm and turning dull routine into a fascinating preliminary struggle with a worth-while problem.

"Blacklock travelled widely and studied tropical medicine in every part of the world, but his name will always be associated most closely with his work in West Africa, particularly in Sierra Leone, a colony from which he did more than any other man to remove the stigma of the white man's grave. It was in Sierra Leone that he carried out the manifold researches in entomology and parasitology which are recorded in his published works; it was in Sierra Leone that he made the discovery, which ranks high in the annals of tropical medicine, of the transmission of *Onchocerca volvulus* by *Simulium damnosum*, and it was to Sierra Leone that he returned during the late war to solve the problem of malaria control in Freetown.

"Despite his reserved manner, he was universally popular, and he will be mourned by many friends in many parts of the world and in every rank of life. The reason for this unsought popularity was not far to seek: he was a fine man in every sense of the word, fine in body, fine in intellect, and possessed of a wonderful power of ignoring the worst and perceiving the best in his fellow man."

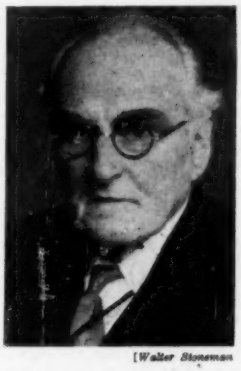
Professor Blacklock married in 1922 Mary Georgina, daughter of George Matthew Thompson, M.D., of co. Derry, who survives him. As his student, and later as his colleague in West Africa, she shared in much of his research.

REDCLIFFE NATHAN SALAMAN

M.A., M.D. Camb., F.R.S., J.P.

ILL health forced Redcliffe Salaman to give up medicine four years after he qualified, but it remained within the range of his flexible scientific interests. As director of the Potato Virus Research Station of the University of Cambridge he made important contributions to our knowledge of virus diseases, and he continued to urge the need for closer understanding between the pathologist and the plant-breeder.

He was born in 1874, one of the twelve children of Myer Salaman, a City merchant. He was educated at St. Paul's School and at Trinity Hall, Cambridge, where he studied under Michael Foster, Gaskell, and Macalister. After taking a first in the natural sciences tripos he entered the London Hospital. He began to do research even before he qualified in 1900, and after holding a house-appointment under Henry Head, he continued his post-graduate studies and research at Würzburg and Berlin. On his return he was appointed director of the pathological institute at the London Hospital and pathologist to the Zoological Gardens. But in 1904 he developed pulmonary tuberculosis. After eighteen months in Switzerland he returned to England restored to health, but decided to spend his life in the country. He accordingly settled at Barley in Hertfordshire, where he began his genetic and agricultural researches. His special interest was the potato plant, and in 1926 he published the results of many years' private investigation in his book *Potato Varieties*. The same year he persuaded the late Sir Daniel Hall and the Ministry of Agriculture to found a research station at Cambridge to investigate the virus diseases of the potato. He became director of this institute and soon afterwards, with R. H. Le Pelley, published a description of the virus latent in all potato plants of the King Edward variety, which he



[*Walter Stoneman*

named the Paracrinkle virus. "This discovery," writes K. M. S., "gave great impetus to the study of latency in plant viruses, and is still one of the strongest pieces of circumstantial evidence for the endogenous origin of some plant viruses. By means of careful testing and selection he also built up a nucleus stock of virus-free seed potatoes which were grown under insect-proof conditions in the Cambridge glass-houses. From this stock small quantities of each variety were multiplied up each year out of doors under conditions of strict isolation from all other potato plants. Much of this work was done on a small island off the west coast of Scotland where there were no other potatoes being grown. These nucleus potato stocks are still in existence and their propagation and care are now under the direction of the National Institute of Agricultural Botany at Cambridge. This idea of raising virus-free stocks of potatoes with a view to improving the yield and quality of the crop generally has now been copied in many other countries. Salaman's interest, however, was more in the potato plant than in viruses, and he spent much time in breeding new potato seedlings for resistance to potato blight, *Phytophthora infestans*."

In 1935 he was elected F.R.S. In 1939 he retired from his appointment to spend the next years writing *The History and Social Influence of the Potato* (1949) in which he traced the history of the plant in relation to social and economic conditions.

A man who was thus ready to point out the wider implications of the virus diseases of plants could not fail to have many interests outside his own research, and he had won respect on the magistrates' bench as well as at the laboratory bench. He became a J.P. for Hertfordshire in 1901; and for twenty-three years he was chairman of the bench.

He also gave much devoted and discerning service to the Jewish community, of which perhaps the most important was his chairmanship of the Jewish Committee for Relief Abroad which was founded in 1943. Of this personal side of his life, S. W. writes: "I first met Redcliffe Salaman some 20 years ago. He was an unusually good-looking man, an aristocrat to the fingertips, quite uninhibited, always saying exactly what he thought without care about the consequences. I never knew him as a scientist and often wondered how a man of such obviously high intelligence and delicate sensibility could have given up the study of man to devote himself to the potato; but he was very good at potatoes. Our common interest at the time was the plight of the scientists, scholars, and doctors who were being driven out of Germany by the Nazi persecution. Salaman devoted every ounce of his energy to this cause. He took great pains to get to know the displaced workers well and used all his influence to find new opportunities for them at home and overseas. He was a pretty good judge of real ability. I remember him saying of one young and relatively unknown biochemist that he was an obvious future Nobel prize-winner; and so he proved to be, and much else besides. What stirred Salaman to action was not only his abiding sense of loyalty to his fellow Jews, who constituted the majority of the victims, but the feeling that the Nazis' behaviour was an affront to all the standards of decency and humanity for which he stood. His other constant love was the Hebrew University of Jerusalem. Though no man was more proud than he of his alma mater, Cambridge, or more touched by the honours it gave him, yet he always referred to the Hebrew University as 'my' university. He had an unlimited faith in the service it would one day render to the Jewish people, the Middle East countries, and all mankind. He put all his wisdom, integrity, and practical experience at the disposal of its board of governors and did much to steer the university safely through its early critical years. He kept in constant touch with all its problems, and until his last illness was willing to see anyone or go anywhere on its behalf if he was told that he could help. Salaman was not a man with whom you could easily become intimate; he was probably more emotional at heart than he was willing to let others know. But he was greatly touched by the honorary fellowships which both his old college and the Hebrew University bestowed upon him during his illness; for he recognised them as tokens that his devotion over many years was fully recognised and appreciated."

Dr. Salaman was twice married. His first wife, Nina, daughter of Arthur Davis, who died in 1925, is still remembered for her translations of Hebrew poetry. They had six children, of whom two sons are doctors. Dr. Salaman is survived by his second wife, Gertrude, née Lowy. He died on June 12 at his home at Barley.

CHARLES ERIC RHODES

M.B. Lond.

Surgeon Lieutenant Rhodes lost his life in H.M. Submarine *Sidon* when she sank after an explosion in Portland Harbour early on June 16. He was medical officer of H.M.S. *Maidstone*, the depot ship alongside which the *Sidon* was lying, and he boarded the submarine with the first rescue party. In difficult circumstances he got some of the wounded to safety. Shortly before the *Sidon* sank he went back to help the others, and he was not seen again.

He was born in Lancashire in 1928, the son of Mr. and Mrs. E. C. C. Rhodes of Bramhall, Cheshire, and was educated at Cheadle Hulme School and Wrekin College. He entered the London Hospital Medical College in 1946, and he qualified in 1952. He was house-physician at the London and house-surgeon at Harold Wood Hospital before he joined the Royal Naval Volunteer Reserve.

J. R. E. writes: "Few men during their years at the London have been more widely known, or more liked and respected. It was impossible not to like someone so obviously happy, enthusiastic about so many things, active in so many ways, and so completely unselfish. He was respected because with all his cheerfulness he was quiet and unassuming, courteous and kind, with sound and fair judgment. He inevitably gave more to the community than he took from it, and his influence was widely felt and good. It was typical of him that at a time when the hospital rugby XV was suffering from a clash of personalities he solved the problem by efficient and tactful service as non-playing secretary. To do so he gave up his own pleasure in a game which he greatly enjoyed, though his poor sight prevented him from being a first-class player.

"In his favourite sport, however, he achieved eminence. Not only United Hospitals, but the Royal Ocean Racing Club and sailing clubs in many parts of the country knew Eric as an experienced helmsman and a delightful companion. Qualification and house-appointments brought a halt to sailing, but his love of the sea made him determined to fulfil his National Service with the Navy. He was within a few weeks of completing it when he gave his life in an act which by its courage, unselfishness, and efficiency was characteristic. The tragedy of the unfulfilled promise, of the loss to medicine of one who possessed complete integrity and the ability to lead by personal example, is only tempered by the knowledge that he achieved much, and in his end achieved greatness."

He leaves a widow and a daughter born a few weeks ago.

DR. R. A. LYSTER

J. B. G. S. writes: "In your obituary there is no mention of Dr. Lyster's appointment as lecturer in forensic medicine and public health at St. Bartholomew's Hospital. He was a first-class lecturer and made his lectures extremely fascinating and clear. He prepared most useful synopses which students could retain and which contained all the salient points at issue. He was able to illustrate his teaching from vast experience and was evidently a diligent reader of the Press. A frequent remark of his was 'I have a cutting here,' in order to reinforce the point he wished to make. He had a pleasing sense of humour and he told his audience that he did not wish to turn them into 'a set of amateur sleuths.' He made plain the various 'grave risks' the practitioner was likely to encounter in his daily work. He had a dignified bearing, he delivered his lectures with an articulation that will always be recalled by those who heard them. One felt the room listening to statements that had an ex-cathedra authority about them. Although he was not an old Bart's man by training, he was one of many distinguished teachers of which Bart's has always been the proud possessor."

Notes and News

OBSTETRIC MEDICINE RESEARCH UNIT AT ABERDEEN

AN obstetric research team has been working, under the direction of Prof. Dugald Baird, in Aberdeen during the past few years. To further this work the Medical Research Council have agreed, with the University of Aberdeen and the North-Eastern Regional Hospital Board, Scotland, to form a unit for research in obstetric medicine under the honorary direction of Professor Baird.

The Scottish Hospitals Endowment Research Trust has promised a substantial grant to the university for the construction of a building adjoining the Aberdeen Maternity Hospital to house the unit. The administration of this building will be arranged jointly by the University and the Aberdeen Special Hospitals Board of Management. The building will provide laboratory facilities and beds for patients requiring special investigation, whose treatment can thus proceed without interruption.

The unit will continue long-term research into problems of maternity, using a combination of epidemiological, clinical, and laboratory methods of investigation. The term "obstetric medicine" in its title recognises the fact that general health problems, of the type which are the concern of the research physician, have become as important as the surgical aspects of obstetrics.

EYE INJURIES IN BOXERS

AT a meeting of the honorary medical officers of the London Amateur Boxing Association on May 24, under the chairmanship of Dr. J. Sharp Grant, Eye Injuries were discussed by Mr. A. Rugg-Gunn.

Mr. Rugg-Gunn expressed the opinion that no-one suffering from any form of epilepsy should be allowed to box; and he recalled that patients with squint associated with amblyopia often had an electro-encephalographic tracing similar to that of epilepsy. The eye, he said, was slung well behind the orbital rim and rested behind on a fatty cushion, the most vulnerable part being its temporal aspect, especially in adduction. The orbital rims of hard compact bone were seldom fractured, but fractures in the neighbourhood of the inner canthus—e.g., the nasal bone and the naso-maxillary process—were not uncommon. The commonest eye injury in boxing was "a black eye," which was rarely serious unless associated with splitting of the upper eyelid or a wound in the neighbourhood of the canaliculi. Corneal and conjunctival abrasions might occur with lid injuries. Subconjunctival hæmorrhages might arise from orbital hæmorrhages as well as from rupture of conjunctival vessels. A direct blow might rupture the pupillary sphincter muscle and produce hyphæma and subconjunctival hæmorrhages. Rupture of the sphincter may cause permanent mydriasis, and should be treated immediately with pilocarpine or eserine drops. Transient paralyses of the extra-ocular muscles, causing diplopia, sometimes followed hæmorrhage into the muscle substance. As a rule, however, paralyses of these muscles were secondary to head injuries and were serious. Naturally, accuracy of hitting and timing of blows were grossly disturbed. A direct blow on the eye in the eyes-front position might cause serious internal injuries. The elastic cornea was dented and waves of force were transmitted backwards through the media, displacing momentarily the iris and lens, affecting all diameters of the eyeball, but impinging with maximum force at the posterior pole or macula. Rupture of the choroid, possibly multiple, and rupture of the retina (less common) might be produced. The stress effects constituted so-called concussion: firstly, temporary vasoconstriction in the macular area, giving rise to anoxia, and secondly, owing to the anoxia, release of histamine-like substances which produced local vasodilatation, œdema, and hæmorrhages. Detachment of the retina was relatively common in professional boxers and was often bilateral. Usually its onset was delayed. When the onset was immediately after a blow, this had probably coincided with temporary obstruction of the venous outflow from the choroid—e.g., through holding the breath—so that the overlying retina was temporarily stretched at the moment of impact. Myopes were more vulnerable than others. Hæmorrhage into the vitreous, disorganising this locally, might produce a strand-like opacity, which was sometimes anchored at one end to the retinal surface. Sudden movements of the eye might pull on the retina at the point of attachment and cause a tear and retinal detachment; and this might happen months later. Blindness in boxers was usually due to retinal detachment.

OLD PEOPLE IN WELFARE HOMES

AT the conference of the Association of Hospital and Welfare Administrators on May 25,[1] Mr. C. R. Pennell, the association's president, expressed grave concern that aged and infirm patients were being accommodated in welfare homes and looked after by staff who were not trained nurses. At one large welfare home he had visited, some 70 of the people needed nursing care. They could not go to an adjoining hospital because there was no room, and, Mr. Pennell added, the local authority could not, or would not, employ nurses. There had been some 40 doctors at this establishment during the first three months of this year. But Mr. Pennell acknowledged that many local authorities had made vast improvements in their accommodation for old people. "In fact," he said, "there are cases where 'lavish' might be the correct word to use, and sometimes some of the old people may feel a little uncomfortable at being made too comfortable. . ."

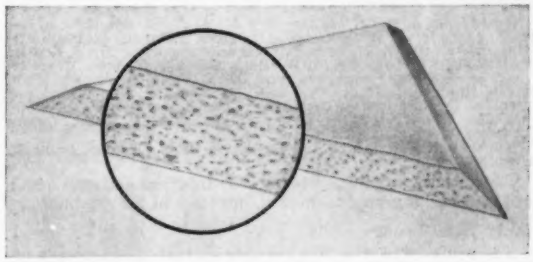
MEDICAL RECORDS

AT an exhibition held in London last month by the Association of Medical Records Officers various hospitals had their own stands. Charing Cross Hospital gave a helpful exposition of checks and controls over the movements of case-notes and also showed how the cards forming the waiting-list are afterwards used as admission cards and finally as an index to the files, thus reducing repetitive clerical work. Among the Southend-on-Sea Hospital practices which were illustrated was pre-registration of new outpatients, whose time at the clinic is saved by sending them a form to complete at leisure in advance and return by post. The numerous other hospital and commercial exhibits included such subjects as storage, outpatient appointments, medical correspondence, and relations between patients and staff. A special stand indicated the scope of the educational work undertaken by the Association of Medical Records Officers, including the holding of examinations on a wide syllabus and publication of a quarterly, *Medical Record*.

As a visual means of presenting a variety of hospital techniques for the consideration of others facing similar problems in their own hospitals and clinics, the exhibition proved a useful innovation.

PRESSURE PADS FOR ULCERATED LEGS

THE rubber pads ordinarily employed for applying additional local pressure in the compression treatment of ulcerated legs have disadvantages which discourage their general use. First, sponge rubber, as usually obtainable, is tough and springy, and can produce a deep dent in the leg. Secondly, the pads have to be individually cut to size and carefully



skived—the latter a tedious affair and inconvenient in a large and busy clinic.

Dr. Stanley Rivlin, of the London Varicose Clinic, points out that, in practice, such pressure is required chiefly in the later stages of healing—when the ulcer has contracted to the size of a half-crown and has either bumpy edges or raised central granulation tissue—and for this reason a pad of standard size will be found appropriate in most cases. To Dr. Rivlin's specification the medical division of the Scholl Manufacturing Company have evolved moulded latex-foam pads, 8 cm. square, "of unbelievable lightness, texture, and porosity," which he has found admirably suited to the purpose.

1. *Manchester Guardian*, May 26, 1955.

Their light weight, he says, ensures soft though firm pressure, while the permeable cellular structure allows healing without maceration.

University of Sheffield

The council has made the following appointments:

Full-time.—Dr. P. Anderson and Dr. N. E. Shaw, demonstrators in anatomy; Dr. K. D. Neame and Dr. F. A. Jenner, assistant lecturers in physiology; Dr. W. D. Smith, research assistant in medicine.

Part-time.—Dr. D. A. J. Tyrrell, hon. lecturer in medicine; Dr. J. D. S. Hammond, tutor in medicine for dental students.

Royal Medical Benevolent Fund

The annual general meeting of the Fund is to be held on Thursday, July 28, at 5 P.M., at 11, Chandos Street, London, W.1, with Lord Webb-Johnson, the president, in the chair.

R.A.F. Appointment

Air Commodore F. E. Lipscomb has been appointed principal medical officer, Royal Air Force, Home Command, with the acting rank of air vice-marshal as from July 1.

American Award

A James Picker Foundation grant has been awarded to Dr. H. A. Sissons, morbid anatomist at the Institute of Orthopædics of the University of London, for microradiographic studies of bone structure.

Oliver Memorial Fund

The committee of this fund again offer an award of £50 to a British subject for original work or services in connection with blood-transfusion. Applications should be sent before Aug. 31 to the hon. treasurer, Mr. F. W. Mills, c/o National Provincial Bank Ltd., Holborn Circus, London, E.C.1.

National Fund for Poliomyelitis Research

This fund has given £1100 for the purchase of apparatus by the division of human physiology of the National Institute for Medical Research. The apparatus will be used at the National Hospital, Queen Square, London, in investigations into cardiorespiratory function in bulbar paralysis conducted by Dr. L. G. C. Pugh.

The Bone and Tooth Society

This society is holding a public meeting in association with the Ciba Foundation, at 1, Wimpole Street, London, W.1, at 3 P.M. on Friday, July 15, when some of the proceedings of the Foundation's symposium on *Bone Structure and Metabolism* will be discussed. The following members of the symposium will speak: Prof. A. Engstrom (Stockholm), Dr. John E. Howard (Baltimore), Prof. G. Fanconi (Zürich), Prof. W. D. Armstrong (Minnesota), and Dr. H. Lisco (Chicago). Prof. R. A. McCance, F.R.S., will preside.

Prizes for Clinical Research

The following have been awarded prizes in the South West Metropolitan Regional Hospital Board's competition for 1954:

Consultants and S.H.M.O.s.—Mr. H. A. Kidd, St. Helier Hospital; Dr. J. E. Wallace and Dr. Ruth Pillman, Aldingbourne Sanatorium; Dr. D. H. Bennett, Netherne Hospital; Dr. J. Lomas, Springfield Hospital; Dr. M. M. Glatt, Warlingham Park Hospital.

Senior registrars, registrars, and J.H.M.O.s.—Dr. E. W. Ball, South Hants Hospital; Dr. J. K. McKechnie, King George V Hospital for Diseases of the Chest; Dr. J. A. Edwards, Knowle and Old Manor Hospitals Mr. D. A. Macfarlane, St. James' Hospital, Balham.

Senior house-officers and house-officers.—Dr. J. Kohari, Lambeth Hospital.

A similar competition is being held this year and particulars will be sent to group medical committees in the region.

Lady Tata Trust

The trustees of this fund announce that they have made the following awards for research on leukæmia and allied diseases, in the year beginning next October:

Grants for research expenses.—Dr. Jørgen Kieler, Copenhagen; Dr. Jo Nordmann, Paris; Dr. Arunachala Sreenivasan, Bombay.

Scholarships.—Dr. Flemming Kissmeyer-Nielsen and Dr. Niels Aksel Stenderup, Aarhus, Denmark; Dr. Jørgen Ringsted and Dr. Jørgen Rygaard, Copenhagen; Prof. H. G. Teir and Dr. C. G. V. Wasastjerna, Helsinki.

Scholarship and grant for research expenses.—Dr. Maxime Seligmann, Paris.

Personal grant.—Mr. Stanislaw Joseph, Oxford.

In addition, a block grant has been made to the Social Medicine Unit, University of Oxford (director, Dr. Alice Stewart), for the cost of a pilot inquiry into possible environmental factors in the ætiology of leukæmia in man.

Diary of the Week

JUNE 26 TO JULY 2

Monday, 27th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. R. Bing (Alabama): Metabolism of the Heart.

Tuesday, 28th

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. P. D. Samman: Follicular Keratotic Disorders.

Wednesday, 29th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, London, W.1
4.30 P.M. *Physical Medicine.* Dr. Philippe Bauwens, Dr. W. M. Levitt, Dr. Robert Forbes: Medicolegal Problems and the Department of Physical Medicine.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Henry Haber: Dyskeratoses.

Thursday, 30th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
4 P.M. Dr. J. F. Goodwin: Mitral Valve Disease.
ROYAL SOCIETY OF MEDICINE
2.30 P.M. *Urology.* Mr. J. Cosbie Ross, Mr. N. O. K. Gibbon, Mr. David Band, Dr. A. G. Hardy: Paraplegic Bladder.
BRITISH ASSOCIATION OF UROLOGICAL SURGEONS
9.30 A.M. (Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.2.) Opening of annual meeting.
RENAL ASSOCIATION
4.30 P.M. (41, Portland Place, London, W.1.) Dr. Alexander Leaf (Boston), Dr. Oliver Wrong: Volume Control of the Body Fluids.

Friday, 1st

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Prof. H. A. Magnus: Reticulosarcoma of Bone.
4 P.M. Dr. W. W. Brigden: Rheumatic Carditis.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Mr. Wallace Black: Congenital Deafness.

Appointments

BARCLAY, DAVID, M.B. Aberd., D.P.H.: deputy M.O.H., Aberdeen.
DAVIES, DEWI, M.D. Lond., M.R.C.P.: physician-superintendent, Ransom Sanatorium, Rainworth, Notts; consultant physician, Mansfield chest clinic.
GILLIATT, R. W., D.M. Oxfd, M.R.C.P.: asst. physician, National Hospital, Queen Square, London.
HALLIWELL, JEAN M., M.B. Manc., D.OBST., D.C.H.: school M.O., Stockport.
MACLEOD, M. C., M.B. Glasg., D.P.H.: senior M.O. and school M.O., Dorset.
MANNING, ANGELA, M.R.C.S.: asst. M.O. and school M.O., Warrington.
PATTERSON, JANET B., M.B. Aberd.: school M.O. and asst. M.O.H., Middlesbrough.
ROSE, CLEMENT, M.D. Lond., D.P.M.: whole-time consultant psychiatrist, Mapperley Hospital, Nottingham.
SHORT, RICHARD, L.R.C.P.E., D.P.H.: area executive M.O., North nos. 1 and 2 areas, and M.O.H., urban districts of Alnwick and Amble, rural districts of Alnwick, Glendale, Rothbury and Norham and Islandshires, Northumberland.
SWINNEY, W. D., M.B. Aberd., D.P.H.: divisional M.O.H., Surrey (Merton and Morden part of North Eastern Division), M.O.H., Merton and Morden U.D.C.
WATTERS, N. M., M.B. Glasg.: whole-time asst. ophthalmologist, Rotherham, Mexborough, and Worksop areas, Sheffield R.H.B.

South Western Regional Hospital Board:

BRADFIELD, A. M., M.B. N.Z.: registrar in psychiatry, Bristol mental hospitals.
EDWARDS, E. M., M.B. Lond., M.R.C.O.G., D.OBST.: temporary senior registrar in obstetrics and gynæcology, Bristol clinical area.
HARGADON, E. J., M.B. Wales: surgical registrar, Cossham-Frenchay hospital group, Bristol.
ROBERTS, A. G., M.B., B.SC. Wales: registrar in psychiatry, Moorhaven Hospital, Ivybridge, South Devon.
THEOBALDS, J. R., M.R.C.S.: medical registrar, Cheltenham General, Eye, and Children's Hospital.
WELLS, A. M., M.B. Brist., D.OBST., D.C.H.: medical registrar, Southmead Hospital, Bristol.

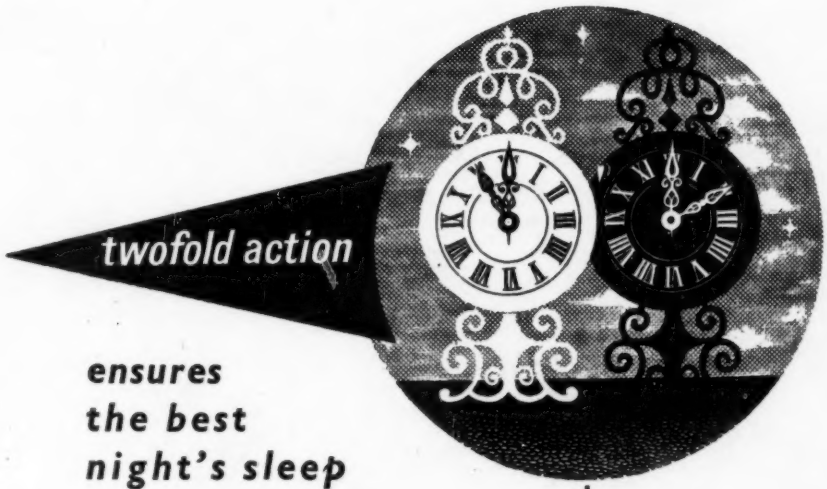
Leeds Regional Hospital Board:

CALDERWOOD, R. W. L., F.R.C.S.: asst. orthopædic surgeon (S.H.M.O.), Pontefract and Castleford group.
HIRD, G. F., F.R.C.S.: asst. orthopædic surgeon (S.H.M.O.), Huddersfield group.
MCCREA, P. C., M.B. Belf., asst. pathologist (S.H.M.O.), Harrogate and Ripon group.
MARCH, H. F., M.B. Durh., M.R.C.P., D.M.R.D.: consultant radiologist, York (A) and Tadcaster, and Scarborough, Malton, and Whitby groups.
MATHER, IDA, M.B. Leeds, D.P.M.: asst. psychiatrist (S.H.M.O.), Stanley Royd Hospital, Wakefield.

Appointed Factory Doctors:

HOUGHTON, H. J., M.B. Wales: Llandrindod Wells, Radnorshire.
LEWIS, M. P., B.M. Oxfd, D.OBST.: Oundle, Northants.

A H



twofold action

ensures
the best
night's sleep

Bidormal, containing a rapid short-acting barbiturate, together with an intermediate-acting barbiturate that has a carefully timed delayed action, provides a unique means of maintaining calm uninterrupted sleep throughout a complete night of 8 hours.

Bidormal has a rapid action which promotes confidence in the therapy and overcomes fear of sleeplessness. The lack of residual hangover, drowsiness or "drugged" feeling enables the patient to set about his daily tasks with no diminution of mental acuity and no feeling of drug dependence.

1 **Outer shell,**
Pentobarbitone sodium B.P. 90 mg.
Action rapid; duration 3 hours.

with

2 **Enteric-coated inner core,**
Butobarbitone B.P.C. 60 mg.
Action begins after 2½ hours; duration 5 hours.

another new A & H product

BIDORMAL

In bottles of 25 Tablets

ALLEN & HANBURYS LTD · LONDON · E·2
TELEPHONE: BISHOPSGATE 3201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"

du MAURIER

the filter tip cigarette

CORK TIP IN THE RED BOX

PLAIN TIP (MEDIUM) IN THE BLUE BOX

When they're convalescing

A little

MOUSSEC

does them a lot of good

Moussec is a perfect natural sparkling stimulant for cases of mental depression, debility and general apathy. Produced only from specially selected grapes by the entirely natural process of double fermentation and free from fortification by any form of spirit it is purity and goodness itself.

THE BABY BOTTLE (ONE-GLASS SIZE) is both adequate and economical. It ensures that the patient gets the benefit of Moussec always in its freshest, most sparkling form.

Baby Moussec is obtainable from all Wine Merchants and Licensed Grocers at 2/3. There are also larger sizes at 4/4, 8/9 and 16/6.

MOUSSEC LTD RICKMANSWORTH HERTS.

"This paper clip saved me 10/- a day"

"I was much too busy to read through the letter and it soon got covered up by other mail. But that evening I found it accidentally clipped to some important documents which I had taken home to study.

It was about a new-style dictating machine, the Dimafon, which has just come on to the market in this country. This letter detailed specific ways in which the Dimafon could save 10–20 per cent of my time, money and temper—and 50–60 per cent of my secretary's. It asked me to test the Dimafon against any other make of machine—to prove for myself which gave the best value for money. Suddenly I realised that a good dictating machine could be a really useful investment.

So I decided to see for myself and test the Dimafon for 14 days. Results were interesting. My secretary and I figured out that it saved us 10/- a day during the trial period; it paid for itself in a few months."

But why don't you try the Dimafon yourself for 14 days, without obligation. See if it doesn't save your time, money and temper. It's so easy. Just write your name and address on the white space at the side of this advertisement; or send your letterhead to:—

Dimafon LIMITED

27 CRAVEN ST., NORTHUMBERLAND AVE., LONDON, W.C.2

They will meet you at any time. Their 'phone number is TRA 6655

for infant feeding–

Carnation Milk

The growing volume of clinical evidence, pointing to the unusual adaptability of unsweetened Evaporated Milk in infant feeding, suggests the presentation of this synopsis, for the convenience of physicians who may wish to keep in touch with this important development.

WHAT IT IS

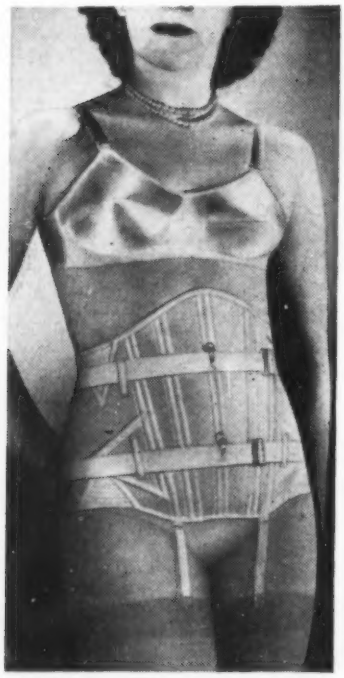
1. Unsweetened Evaporated Milk is pure whole milk from tuberculin tested dairy herds. It is concentrated to approximately double richness by the evaporation of water and has nothing added except *natural* Vitamin D3.
2. It is not to be confused with sweetened condensed milk, which contains about 40% of added cane sugar.
3. Unsweetened Evaporated Milk is standardised to meet the strict Government requirements of 31% minimum total solids, of which not less than 9% must be butterfat.
4. Carnation is of a known nutritional value. It is easily reconstituted to milk of ordinary richness by the addition of water. The consistency never varies.

Carnation Feeding Charts and reprints of clinical investigations are available to the medical profession from: Medical Department, General Milk Products Ltd., Candlewick House, 116/126, Cannon Street, London, E.C.4.

HOW IT SERVES

1. The natural reaction of the proteins to heat results in a granular curd similar to that of breast milk. Digestibility is therefore suitably ensured for *all* infants. Attenuation of the whey fractions greatly benefits those infants sensitive to milk proteins.
2. Carnation is a simple full cream milk, homogenised to present butterfat in a form tolerated by most infants. The globules, 2 microns in diameter, are permanently dispersed, and form a fine emulsion when water is added. Prematures and other fat intolerant infants usually take Carnation very satisfactorily.
3. Each fluid ounce of Carnation Milk provides not less than 33 i.u.'s of Vitamin D3. Clinical survey proves this quantity adequate for prophylactic purposes. Carnation Milk is a superior source of vital calcium, phosphorus and nitrogen.
4. Carnation Milk is universally obtainable, simple to use and SAFEST in inexperienced hands because of guaranteed sterility.

"FROM CONTENTED COWS"



FWS 1181

CAMP Supports for use in
PNEUMOPERITONEUM TREATMENT
of PULMONARY TUBERCULOSIS

Snugly fitting abdominal supports for MEN and WOMEN, designed to maintain the rise of the diaphragm caused by the injection of air. These supports are of great help in preventing the abdomen from becoming distended after the injection of air. The support being made to fit well down in the groin provides protection where potential hernia is a complication. The supports are specifically designed so that the upper contour follows the lines of the rib cage and to give full support to the abdominal muscles.

Illustrated Reference Book will be sent free on request

S. H. CAMP & COMPANY LTD.
19 HANOVER SQUARE, LONDON, W.1
Telephone : MAYFAIR 8575 (4 lines)

DIABETIC BEER

At last, after many years of careful and exhaustive experiments by scientists and doctors, it has now been made possible to market a full flavoured, high gravity Beer with a very low carbohydrate content.

This Beer has been specially brewed, matured and bottled in Germany by the Holsten Brewery of Hamburg.

Each bottle bears a copy of the analyst's report shown below. It is suitable for most diabetics and is indistinguishable from any of the foreign Pilsners both in quality and flavour. This Beer is also non-fattening and suitable for people who do not wish to increase their weight, and is a delicious drink when served iced during the warm weather.

SUGAR ANALYSIS FROM THE DIABETIC CLINIC OF A LONDON HOSPITAL

D "PILS" Holsten-Brauerei, Hamburg.
I have estimated the sugar content of this Beer with the following results :—
FREE SUGAR (unhydrolised reducing substance) = 0·2 gm. %
TOTAL CARBOHYDRATE—estimated as glucose = 0·75 gm. %

DIABETIC Pils BEER

CARBOHYDRATE CONTENT OF BOTTLE OF BEER

1 bottle (approximately ½ pint) of D "PILS" contains approximately 2 grams carbohydrate.
½ pint ordinary beer contains approximately 10 grams carbohydrate

RETAIL PRICE 2/6 per bottle, delivered—cash with order.

Trade enquiries to : **PETER PRIME LTD.**
55 Farringdon Street, London, E.C.4. *Tel.: CITy 1731 (6 lines)*

"MIOTROL"-P
TRADE MARK

Tablets containing :—
Methyl Testosterone 2.5 mg. Ethinyl Oestradiol 0.005 mg. Phenobarbitone 16.0 mg. (¼ gr.)

A synergistic combination of androgen and oestrogen with phenobarbitone.

Specifically designed for control of symptoms associated with menopausal disturbances, premenstrual migraine and tension, dysmenorrhoea.

Literature forwarded on request.

AN OXOID PRODUCT

OXO LTD. (Medical Dept.)
THAMES HOUSE, LONDON, E.C.4
Telephone: CENtral 9781

Phenoxetol

THE WELL-KNOWN ANTISEPTIC AGAINST GRAM-NEGATIVE ORGANISMS

NIPA LABORATORIES LIMITED
TREFOREST INDUSTRIAL ESTATE Nr. CARDIFF
TEL TREFOREST 2128/9

Sole Distributors for the United Kingdom
P. SAMUELSON & CO
1, CRUTCHED FRIARS, LONDON, E.C.3
Telephone: ROYAL 2117/8

AMPHETONE
REGISTERED

A GENERAL STIMULANT FOR THE CENTRAL NERVOUS SYSTEM

For cases requiring a quick-acting general stimulant without increasing the patient's appetite, we consider Amphetone unique. It combines for the first time, Dexamphetamine Sulphate and Strychnine with Glycerophosphates and members of the Vitamin B Group. The Dexamphetamine provides the convalescent with an immediate feeling of well-being, this being followed by the well-known tonic effects of the other medicaments. Clinical reports have been excellent.

FORMULA
Dexamphetamine Sulphate B.P.C., 1/12 grain : Strychnine Hydrochloride B.P., 1/60 grain : Calcium Glycerophosphate B.P.C., 2 grains : Sodium Glycerophosphate B.P.C., 2 grains : Aneurine Hydrochloride B.P., 1/30 grain : Nicotinamide B.P., 1/4 grain : Riboflavin B.P., 1/60 grain : Syrup of Blackcurrant B.P.C., 2 fluid drms. : Water, to 1/2 fluid ounce.

POISON | S1

Available in bottles containing 10, 20, 40 and 80 fluid ounces. Professional prices 4/8, 8/10, 14/7 and 26/6 each. Samples available on request.

JAMES WOOLLEY, SONS & CO. LTD., VICTORIA, BRIDGE, MANCHESTER 3
London stockists: May, Roberts & Co. Ltd., 47, Stamford Hill, London, N.16

WAI

Cut costs with this

UNBREAKABLE 'ATLAS' NYLON SYRINGE

(Made in England)

The product of 5 years development

Here, at last, is a syringe that is proof against almost any accident! The "Atlas" syringe, precision-made of tough, translucent nylon, cuts replacement costs and, because barrels and pistons are interchangeable, saves time too!

Other special features:

- All-in-one barrel and nozzle: no leaks—quick, easy cleaning, complete hygiene.
- Leak-proof, smooth-working pistons never stick.
- Convertible immediately from Record to Luer fitting without adapter.
- Can be sterilized by boiling or autoclaving at 15 lb. steam pressure (120°C.).
- Does not affect the pH of solutions.

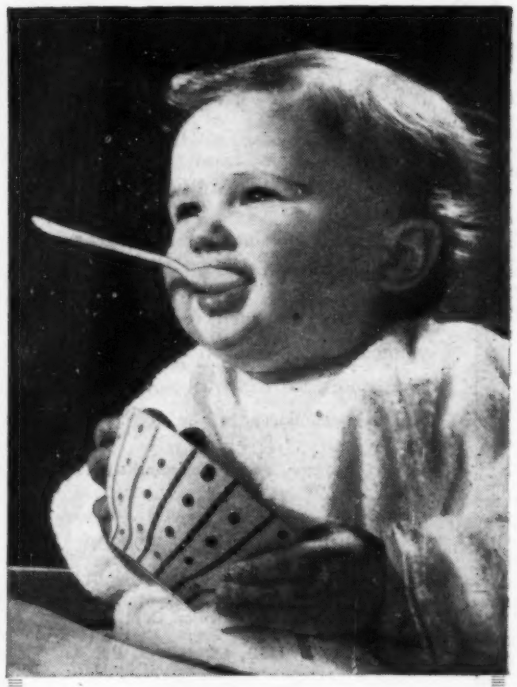
Prices:
Less than 1 gross: 3 ml.–9/6, 5 ml.–10/6, 10 ml.–12/6, 20 ml.–15/-.
1 gross or more assorted: 3 ml.–9/-, 5 ml.–10/-, 10 ml.–11/9, 20 ml.–14/3.

Chas. F. Thackray LTD

Please write for descriptive leaflet with prices.

Head Office: THE OLD MEDICAL SCHOOL, PARK ST., LEEDS 1.
Tel: 20085 (5 lines) Cables: Aseptic, Leeds

London Office: 38 WELBECK ST., LONDON W.1. Tel. WELbeck 8152/3
Also at Cape Town and Johannesburg



Mothers are grateful when you advise canned strained foods

When you recommend a varied diet for baby based on Heinz Strained Foods, you recommend a diet which even the busiest mothers can follow. And baby will benefit not only from the nourishment of these foods, but also from becoming accustomed to a variety of flavours at an early age.

And another point is this. It is often impossible for a mother to make foods as nourishing as Heinz. Heinz have the advantage of buying farm-fresh fruits and vegetables and also of having cooking and straining equipment that keeps the maximum amount of goodness in the foods.

For a FREE booklet which gives the exact nutrient values of all 19 varieties of Heinz Strained Foods, please write to Dept. 2P, H. J. Heinz Company Ltd., London, N.W.10.

57 HEINZ

Strained Foods

SOUPS MEAT BROTHS VEGETABLES SWEETS CEREAL

A non-toxic Antiseptic Germicide

KEEDOSOL (FERRIS) provides a general antiseptic of high bactericidal potency yet possessing marked advantages not attributable to germicides of phenolic origin. It is non-poisonous, even in high concentration, non-injurious to living tissue, and its agreeable refreshing odour renders it pleasant in use. For the guidance of users of this modern germicide a table of recommended dilutions is affixed to each container.

Available in 4-oz.; 8-oz.; 16-oz.; and 80-oz. bottles and 1-gallon tins

KEEDOSOL

(FERRIS)

Samples on request

FERRIS & CO LTD

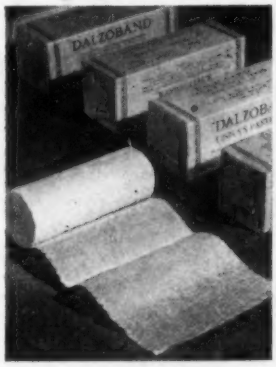
BRISTOL

Telephone 21381 *Telegrams FERRIS BRISTOL*

... I find Dalzoband Zinc Paste Bandages hard to beat

DALZOBAND MEDICATED BANDAGES

These are an Unna's paste type bandage that are always moist—always ready to use. The medicated bandages are loosely wound round the affected part and covered with another dry bandage tightly applied. There are five varieties of Dalzoband, all of which conform to the specifications for such bandages in the Drug Tariff.



Dalzoband (2) Zinc Paste Bandage B.P.C. 6 yds × 3½" standard (No. 2) and extra moist (No. 2x)

Dalzoband (3) Zinc Paste and Ichthammo 2% B.P.C. 6 yds × 3½" standard (No. 3) and extra moist (No. 3x)

Dalzoband (4) Zinc Paste with Urethane 2% and Ichthammol 2% Drug Tariff 6 yds × 3½"

Dalzoband (5) Zinc Paste with Urethane 2% and Calamine 5.75% Drug Tariff 6 yds × 3½"

Dalzoband (6) Zinc Paste with Coal Tar 3% Drug Tariff 6 yds × 3½"

DALMAS *Available on E.C.10*

DALMAS LIMITED, LEICESTER & LONDON. Established 1823

In your hands...

... the skill to diagnose, to prescribe, to treat, to bring your patients back to full and vigorous health. In your hands ... the opportunity to advise on the small but all-important matters of hygiene that help to ward off infection and sickness in the home; the way, for instance, to ensure scrupulous personal cleanliness.

In this you know you can safely recommend Wright's Coal Tar Soap—the soap of unsurpassed purity, endowed with the remarkable antiseptic, antipruritic properties of Wright's Liquor Carbonis Detergens. For doctors and nurses all over the world use it, both in the treatment of skin diseases and as a personal safeguard. And do you not use it yourself?

Awarded for 50 years the Certificate of Merit of the Royal Institute of Public Health and Hygiene

WRIGHT'S COAL TAR SOAP

Ideal for Toilet, Bath and Nursery

YOUR CHILD

In your plans for your child's education and career life assurance can be a real help. Write today for a copy of the New "Career Policy" leaflet to

SCOTTISH WIDOWS' FUND

Head Office: 9 St. Andrew Square, Edinburgh, 2
London Offices: 28 Cornhill, E.C.3 17 Waterloo Place, S.W.1

Two's Company...

with PLAYER'S No. 3

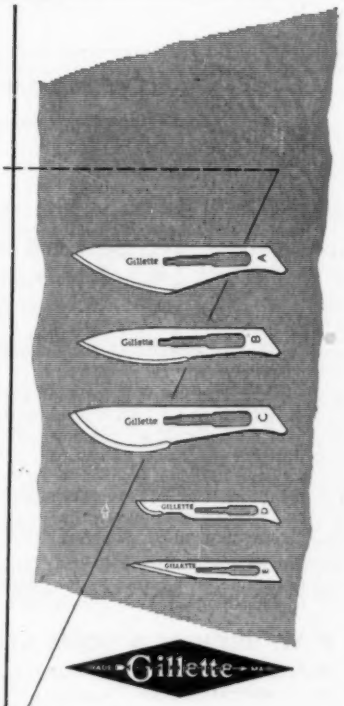
The Quality Cigarette

[3P 126A]

Sharp as Gillette

All the experience gained in producing the world's sharpest razor blades has been brought by Gillette to making surgical blades of supreme sharpness and uniformity of edge. Working closely with leading surgeons they have modified the blade shapes and produced a series which meets all requirements. The same degree of care and precision has been devoted to making Gillette blade handles, in order to ensure absolute rigidity in use. In this way the modern techniques of razor blade manufacture have been applied to produce a surgical instrument of the very highest quality.

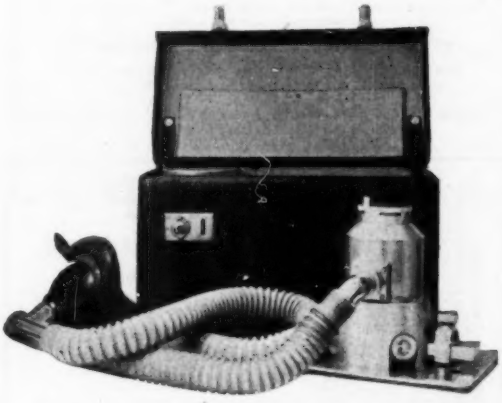
GILLETTE SURGICAL BLADES



The TECOTA Mark 6

Temperature Compensated Inhaler for Trichloroethylene B.P. Analgesia.

Approved by the Central Midwives Board



- 0·5% Trichloroethylene in air maintained from 55° F. to 95° F. over wide ranges of respiratory rates and tidal volumes.
- Low resistance to breathing.
- Weight only 7 lbs.
- Size 6¼" x 13" x 7".
- Works in any position.
- Cannot be overfilled.
- Designed and manufactured by :—

CYPRANE Limited

HAWORTH KEIGHLEY YORKS.

Nowhere else will you find an exhibition specialising in instruments and instrumentation, of the size and scope of

THE BRITISH INSTRUMENT INDUSTRIES EXHIBITION

Every field of instrumentation in Power Supply, Industry, Medicine, Research and Education is covered. You will see all classes of temperature pressure and flow controllers for industrial use, electrical measurement and control, complete equipment for sea and air navigation and land surveying, scientific instruments and equipment for all laboratories, electronic instruments for all applications and precision equipment in such diverse fields as metrology, photography and engineering design.

The products of the British Instrument Industry will be conveniently displayed all on one floor ! Industrialists will find a visit to the exhibition extremely rewarding.

F. W. BRIDGES & SONS LTD.,
GRAND BUILDINGS, TRAFALGAR SQUARE, LONDON, W.C.2
Phone : WHITEHALL 0568 *Telegrams and Cables :* SEGDIRB, RAND, LONDON

Make your reservations now

During this exhibition, IPEX-the 10th International Printing Machinery and Allied Trades' Exhibition opens at nearby OLYMPIA. Book your hotel accommodation now. For further details or an official catalogue of the British Instrument Industries Exhibition when published, write to the Organisers.

PRESCRIPTION for PRACTITIONERS

A Sickness Policy with the Medical Sickness Society

TAKE ONE NOW

For particulars please write to the Society
3 CAVENDISH SQUARE
LONDON, W.1
TELEPHONE : LANGHAM 2991 (3 lines) and 6496 (2 lines)

THE WORLD'S GREATEST BOOKSHOP
FOYLES
* FOR BOOKS *
Famed Centre For
Medical Books
Depts. for Music, Stationery, Records, Handicraft Tools and Materials, Magazine Subscriptions, Lending Library, Foreign Stamps and Coins.
119-125 CHARING CROSS ROAD LONDON WC2
Gerrard 5660 (16 *lines*) ★ *Open* 9-6 (*inc. Sats.*)
Nearest Station : Tottenham Court Road

AKLOREP
(*Acid HCl and Pepsin*)
Achlorhydria
Hypochlorhydria
and all associated conditions.

50 tablets 6/6d. (subject)
500 ,, 58/6d. ,,
Prescribe on E.C.10
ROBERTS & CO.
76, New Bond Street, London, W.1

NATIVELLE'S DIGITALINE

Successful Clinical Practice spreading over many years is proof of the trustworthiness of THE ORIGINAL PRODUCT. Standard works on cardiology and current medical literature contain numerous references to the unfailing reliability and constant activity of NATIVELLE'S DIGITALINE. Literature and samples will gladly be forwarded on request.

Supplied in the following forms: **TABLETS (Pink) 0·1 mg. (1/600 gr.). TABLETS (White) 0·25 mg. (1/240 gr.). AMPOULES for intramuscular and intravenous injection 0·2 mg. (1/300 gr.).**

OUABAINE ARNAUD

May be relied on for constant therapeutic effect whenever Strophanthus preparations are indicated. International Standard of Ouabaine kept in National Institute for Medical Research, London.

Supplied in the following forms: **TABLETS 2·5 mg. (1/24 gr.). AMPOULES 0·5 mg. (1/120 gr.) for intramuscular injection. AMPOULES 0·25 mg. (1/240 gr.) for intravenous injection.**

Samples and literature on request.

WILCOX JOZEAU & CO., LTD.

74-77, WHITE LION STREET, LONDON, N.1, and at 19, TEMPLE BAR, DUBLIN

JENNER INSTITUTE Glycerinated VACCINE LYMPH

PREPARED IN ACCORDANCE WITH THE THERAPEUTIC SUBSTANCES REGULATIONS (BRITISH PRODUCT)

Telephone: BATTERSEA 1347

SINGLE VACCINATION TUBES - - - 12/- dozen. Postage extra
LARGE TUBES (EXPORT only) sufficient for 5 vaccinations, 20/- dozen

Telegrams: "JENVACTER, SOUPHONE, LONDON" (2 words)

JENNER INSTITUTE FOR CALF LYMPH LTD., 73, Battersea Church Road, S.W.11

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CHEADLE ROYAL, CHEADLE, CHESHIRE

REGISTERED MENTAL HOSPITAL

PRESIDENT: THE RIGHT HON. THE EARL OF DERBY, M.C.

MEDICAL SUPERINTENDENT: W. V. WADSWORTH B.Sc., M.B., M.R.C.P., D.P.M.

This Hospital receives all types of patients who are suffering from psychological and senile illnesses. It has recently been extensively re-decorated and central heating has been installed throughout, making it one of the most luxuriously appointed hospitals in the country. Private rooms, with special nurses, can be provided. All patients receive very careful and thorough clinical and pathological investigations; the most modern psychiatric treatment is available, including deep insulin therapy. Psychotherapeutic treatment is employed in suitable cases.

Occupational therapy is a special feature of the Hospital and there are excellent facilities for indoor and outdoor recreation—tennis, cricket, croquet, badminton, billiards, cinema, television, etc. Geriatric units for mild cases of senility are provided where patients can pursue as normal a life as possible.

The Hospital is situated in three hundred acres of pleasant Cheshire parkland and yet is only nine miles from Manchester. Glan-y-Don is the Hospital's convalescent home, overlooking the sea at Colwyn Bay. It is extremely comfortable and well appointed and has its own farm and market garden.

For terms and further particulars, apply to the Medical Superintendent. Telephone: GATLEY 2231.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P *Telephones*—TEIGNMOUTH 289 and 537

CHISWICK HOUSE

PINNER, MIDDLESEX

Telephone: PINNER 234

A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern house, 12 miles from Marble Arch, in attractive secluded grounds. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc.

DOUGLAS MACAULAY, M.D., D.P.M.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 6 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone : Norwich 20080

THE LANCET

CLASSIFIED ADVERTISEMENT RATES (Minimum three lines)

Appointments	**per column line : 5s. 3d.**
Official and General Announcements	" " " : **5s. 3d.**
Trade and Miscellaneous	" " " : **5s. 3d.**
Public Companies (Prospectuses)	" " " : **8s. 9d.**

THE MEDICAL PROTECTION SOCIETY LIMITED

Over 60 years experience in medical defence and protection

Complete Indemnity granted to members in cases undertaken on their behalf

ANNUAL SUBSCRIPTION : £1 for first three years for newly qualified entrants and £2 thereafter

Full particulars from the Secretary (Dr. Alistair French), **Victory House, Leicester Sq., W.C.2.** Gerrard 4553 and 4814

Vacancies

ACADEMIC AND EDUCATIONAL SECTION *Page* 46

ANÆSTHETICS
Alton Hosps. Reg. 50
Birmingham R.H.B. Regs. 50
Birmingham United Hosps. Sr. H.O. 50
Bromley Group H.M.C. Sr. H.O. .. 52
Cambridge. Addenbrooke's. Sr. H.O. or Locum 52
Carluke. Lanarkshire. Law. Sr. H.O. 52
Leeds A Group H.M.C. Sr. H.O. .. 55
Leeds R.H.B. Regs. 54
Liverpool United Hosps. Reg. .. 55
Newcastle R.H.B. Reg. 56
North East Met. R.H.B. Reg. .. 57
Norwich United Hosps. Sr. H.O. .. 57
Nottingham City. Sr. H.O. 57
Nottingham Gen. Sr. H.O. 57
Orpington, Kent. Sr. H.O. 57
Reading. Royal Berks. Sr. H.O. .. 58
Scotland. Western R.H.B. Sr. Reg. & Reg. 59
Swansea. Sr. H.O. 59
Welsh R.H.B. Reg. 60
Winchester. Royal Hants County. H.O. 60
New Zealand. Waikato Hosp. Board. Jr. or Sr. Specialist. 48
Western Australia. Royal Perth. Asst. Director 48

CARDIOLOGY
Liverpool United Hosps. Reg. .. 55

CASUALTY
Queen Mary's Hosp. for the East End, E.15. H.O. 49
Royal Northern, N.7. Sr. H.O. .. 49
St. Nicholas, S.E.18. H.O. 49
St. Stephen's, S.W.10. Sr. H.O. .. 50
Wanstead, E.11. Sr. H.O. 50
Coventry & Warwickshire. Sr. H.O. 53
Derby. Derbyshire Royal Infy. Sr. H.O. 53
Douglas. Noble's Isle of Man. H.O. .. 53
Hemel Hempstead. West Herts. Jr. H.M.O. 54
Hillingdon, Middx. Jr. H.M.O. .. 54
Hitchin Hosps. H.O. 54
Newcastle R.H.B. Sr. Casualty Officer 48
Norwich. Norfolk & Norwich. Sr. H.O. & H.O. 57
Paisley & Dist. Hosps. B.O.M. Jr. H.M.O. 58
Plymouth. South Devon & East Cornwall. Sr. H.O. 57
Romford. Oldchurch. Sr. H.O. .. 58
Rugby. Hosp. of St. Cross. Jr. H.M.O. 58
Salisbury Gen. Locum Sr. H.O. .. 59
Slough. Upton. H.O. 59
Watford Peace Mem. H.O. 60
Welsh R.H.B. Locum Sr. Casualty Officer 48
Wolverhampton Group. H.O. .. 60

CHEST AND TUBERCULOSIS
Brompton, S.W.3. P.-t. Sr. Reg. .. 48
West Ham Chest Clinic, E.13. P.-t. Clin. Asst. 50
Braintree. Black Notley. Sr. H.O. .. 51
Brighton. Bevendean. Jr. H.M.O. .. 51
Cardiff. Glan Ely. Sr. H.O. 52
East Anglian R.H.B. Sr. Reg. .. 53
Leeds R.H.B. Sr. H.M.O. 47
Liverpool. Newsham Gen. Jr. H.M.O. or Sr. H.O. 55
Manchester R.H.B. Reg. 56
Manchester R.H.B. Sr. H.M.O. .. 48
Newcastle R.H.B. Reg. 56
Weaverham, Cheshire. Heffferston Grange San. Locum Sr. H.O. .. 60

DENTAL SURGERY
South East Met. R.H.B. P.-t. Dental Surgeon 48

DERMATOLOGY
Birmingham Skin. Sr. H.O. or H.O. 50
Glasgow. Stobhill Gen. Pre-reg. H.O.'s 53

EAR, NOSE, AND THROAT
Birmingham & Midland Ear & Throat. H.O. 51
Birmingham R.H.B. Reg. 50
Cambridge. Addenbrooke's. Sr. Reg. & H.O. 52
Manchester R.H.B. Regs. 56
Nottingham Gen. Sr. H.O. 57
Salisbury Gen. Sr. H.O. 59
Scotland. Western R.H.B. Reg. .. 59
Shrewsbury Hosp. Group. Reg. .. 59
Southampton. Royal South Hants & Southampton Gen. Sr. H.O. .. 59
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 58
Wolverhampton Group. H.O. .. 60

ENDOCRINOLOGY
New End, N.W.3. Pre-reg. H.O. .. 49

GERIATRICS
Bradford A & BH.M.C. H.O. .. 51
Glasgow. Stobhill Gen. Pre-reg. H.O.'s 53
Halifax. St. John's. Sr. H.O. .. 54
Leeds R.H.B. Locum Sr. H.M.O. .. 47
Rochford, Essex. Gen. Locum Reg., Sr. H.O., & Locum Sr. H.O. .. 58
South West Met. R.H.B. Reg. .. 59

HÆMATOLOGY
Brentwood. North East Met. Regional Blood Transfusion Centre. Jr. H.M.O. 51

INFECTIOUS DISEASES
St. Ann's Gen., N.15. Sr. H.O. .. 49
Cardiff Isolation. Sr. H.O. 52
Paisley & Dist. Hosps. B.O.M. H.O. .. 58
Plymouth. Scott Isolation. H.O. .. 57

LARYNGOLOGY AND OTOLOGY
Liverpool United Hosps. Reg. .. 55

MEDICINE
Fulham, W.6. H.O.'s 49
Guy's, S.E.1. Reg. 48
Lambeth, S.E.11. Reg. & H.O. .. 49
Princess Beatrice, S.W.5. H.O. .. 49
St. Leonard's, N.1. H.O. 49
Wanstead, E.11. H.O. 50
Whittington, N.19. H.O. 50
Alexandria, Dunbartonshire. New Vale of Leven. H.O. 50
Ashton, Hyde & Glossop H.M.C. H.O. 50
Aylesbury. Stoke Mandeville. H.O. 50
Birmingham R.H.B. Regs. 50
Birmingham United Hosps. Reg. .. 51
Bishop's Stortford & Dist. Sr. H.O. 51
Bournemouth. Christchurch. Pre-reg. H.O. 51
Bradford Royal Infy. Sr. H.O. .. 51
Bristol. Ham Green. H.O. 52
Bristol United Hosps. & South Western R.H.B. Reg. 51
Carmarthen. West Wales Gen. H.O. 52
Chester-le-Street. Gen. H.O. .. 53
Croydon. Mayday. Pre-reg. H.O. .. 53
Derby City. Pre-reg. H.O. or Sr. H.O. 53
Derby. Derbyshire Royal Infy. Pre-reg. H.O. 53
Durham. Dryburn. H.O. 53
Glasgow. Canniesburn Hosp. & Schaw Home. Jr. H.M.O. 53
Gt. Yarmouth & Gorleston Gen. H.O. 54
Haverfordwest. Pembroke County War Mem. H.O. 54
Lincoln. St. George's. Jr. H.M.O. .. 55
Liverpool. Newsham Gen. Pre-reg. H.O. or Sr. H.O. 55
Liverpool. Sefton Gen. Sr. H.O.'s .. 55
Liverpool. Sefton Gen. H.O.'s .. 55
Liverpool United Hosps. Reg. .. 55
Lowestoft & North Suffolk. H.O. or Sr. H.O. 55
Lymington, Hants. Sr. H.O. 55
Maidstone. West Kent Gen. Pre-reg. H.O. 55
Manchester United Hosps. Sr. H.O. .. 56
Newcastle R.H.B. Reg. 56
Newmarket Gen. H.O. 57
Norwich. Norfolk & Norwich. H.O.'s 57
Pontypridd & Rhondda H.M.C. Sr. H.O. 58
Portsmouth Group H.M.C. Pre-reg. H.O.'s 58
Rochdale & Dist. H.M.C. Sr. H.O. .. 58
Rochdale & Dist. H.M.C. H.O.'s .. 58
Romford. Oldchurch. H.O.'s .. 58
Salisbury Gen. Reg. 59
Scotland. Western R.H.B. Sr. Reg. 59
Sheffield R.H.B. Sr. Reg. 59
Shrewsbury. Royal Salop Infy./Copthorne. Pre-reg. H.O 59
Stafford. Staffordshire Gen. Infy. Pre-reg. H.O. 60
Stockport & Buxton H.M.C. H.O.'s 58
Stoke-on-Trent. Haywood. Jr. H.M.O. 58

Warrington Infy. Pre-reg. H.O. or Sr. H.O. 60
Warwick. H.O. 60
Watford. Peace Mem. Pre-reg. H.O. 60
Weston-super-Mare Gen. H.O. 60
Michigan U.S.A. Oakwood. Residency 61

NEUROLOGY
Aylesbury. Stoke Mandeville. Pre-reg. H.O. or Sr. H.O. 50
Newcastle Gen. Sr. H.O. 56
North West Met. R.H.B. P.-t. Cons. 47

NEUROSURGERY
National Hosps. for Nervous Diseases, W.C.1. Reg. 49
Bristol-Cossham/Frenchay H.M.C. Sr. H.O. 52

OBSTETRICS AND GYNÆCOLOGY
Annie McCall Maternity, S.W.4. H.O. 48
Bethnal Green, E.2. H.O. 48
Dulwich, S.E.22. Sr. H.O. 48
South London Hosp. for Women & Child., S.W.4. H.O. 49
Birmingham. Sorrento Maternity. H.O. 51
Bradford. St. Luke's. H.O. 51
Bury & Rossendale H.M.C. Sr. H.O. 52
Canterbury. Kent & Canterbury. H.O. 52
Croydon. Mayday & St. Mary's Maternity. Locum Sr. H.O. 53
Griffithstown, Mon. County. Sr. H.O. 54
Harrogate & Dist. Gen. Sr. H.O. 54
Hemel Hempstead. West Herts & St. Paul's Hosps. Reg. 54
Leeds R.H.B. Reg. 54
Liverpool. Sefton Gen. H.O.'s 55
Liverpool United Hosps. Reg. 55
Manchester R.H.B. Reg. 56
Manchester United Hosps. Sr. H.O. 56
Newcastle R.H.B. Locum Sr. Reg. 56
Newmarket Gen. Sr. H.O. 57
Paisley & Dist. Hosps. B.O.M. H.O. 58
Paisley & Dist. Hosps. Maternity Unit. Locum Jr. H.M.O. 58
Plymouth, South Devon & East Cornwall Gen. H.O. 58
Portsmouth Group H.M.C. Sr. H.O. 58
Reading. Royal Berks. H.O. 58
Rochford, Essex. Gen. H.O. 58
Rugby. Hosp. of St. Cross & St. Mary's, Harborough Magna. H.O. 58
Scotland. Western R.H.B. Reg. 59
Southend-on-Sea. Gen. H.O. 59
Stockport & Buxton H.M.C. H.O. 58
Swansea. Mount Pleasant. Sr. H.O. 59
West Fife Hosps. B.O.M. H.O.'s 60
Wolverhampton Group. H.O. 60
Wrexham. Trevalyn Manor Maternity. H.O. 60
Northern Ireland Hosps. Auth. Sr. H.O.'s 61

OPHTHALMOLOGY
North West Met. R.H.B. P.-t. Sr. H.M.O. 47
Birmingham & Midland Eye. H.O. 50
Bradford. Royal Eye & Ear. H.O. 51
Brighton. Sussex Eye. Sr. H.O. 51
Coventry & Warwickshire. Sr. H.O. 53
Liverpool United Hosps. Regs. & Temp. Sr. H.O. 55
Manchester United Hosps. Sr. H.M.O. 48
Newcastle upon Tyne H.M.C. Sr. H.O.'s 56
Nottingham & Midland Eye Infy. Sr. H.O.'s 57
Southampton Eye. Sr. H.O. 59
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 58
Welsh R.H.B. Reg. 60
Windsor. King Edward VII. P.-t. Clin. Asst. 61

ORTHOPÆDICS
Fulham, W.6. Sr. H.O. 49
Bolton Royal Infy. Sr. H.O. 51
Bournemouth & East Dorset H.M.C. Reg. 51
Bradford. St. Luke's & Woodlands Hosp., Rawdon. Sr. H.O. & H.O. 51
Bristol United Hosps. & South Western R.H.B. Sr. Reg. & Reg. 51/52
Coventry & Warwickshire. Sr. H.O. 53
Croydon. Mayday. H.O. 53
Enfield. Chase Farm. Locum Reg. 53
Leeds. St. James's. Sr. H.O. 55
Liverpool. Sefton Gen. Sr. H.O.'s 55
Louth. County Infy. Sr. H.O. 55
Manchester R.H.B. Reg. 55
Mansfield. Harlow Wood Orthopædic. Reg. 56
Newcastle R.H.B. Reg. 56
Norwich. Norfolk & Norwich. H.O. or Sr. H.O. 57
Paisley & Dist. Hosps. B.O.M. Jr. H.M.O. 58
Southampton. Royal South Hants. H.O. 59
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 59
Wakefield. Pinderfields Gen. Sr. H.O.'s 60
Welsh R.H.B. Reg. 60
Welsh R.H.B. Locum Sr. H.M.O. 48
Wolverhampton Group. Sr. H.O. or H.O. 60
Yorkshire. East Riding H.M.C. H.O. 61

PÆDIATRICS
Central Middlesex, N.W.10. H.O. 48
Memorial, S.E.18. H.O. 49
Westminster Child's, S.W.1. Locum Reg. 50
Cardiff United Hosps. Sr. H.O. 52
Hastings. St. Helen's. H.O. 54
Liverpool United Hosps. Regs. 55
Norwich. Norfolk & Norwich. H.O. 57
Portsmouth Group H.M.C. Sr. H.O. & Pre-reg. H.O. 58
Shrewsbury. Royal Salop Infy. Sr. H.O. or H.O. 59
Southend-on-Sea. Gen. H.O. 59
Windsor. King Edward VII. H.O. 61
Canada. Ottawa Gen. Residency 61

PATHOLOGY
Guy's, S.E.1. P.-t. Cons. 47
Royal Free, W.C.1. H.O. 49
Birmingham United Hosps. Sr. H.O. 51
Chelmsford H.M.C. Locum Reg. 52
Kingston Group H.M.C. Reg. 54
Liverpool United Hosps. Reg. 55
Manchester R.H.B. Sr. H.M.O. 48
Nottingham Gen. Sr. H.O. 57
South West Met. R.H.B. Locum Sr. H.M.O. 48
Canada. Gen. Hosp. Pembroke, Ont. Pathologist 48
Canada. Ottawa Gen. Sr. Intern 61

PHYSICAL MEDICINE
King's College Hosp., S.E.5. Reg. 49

PLASTIC SURGERY
Chepstow, Mon. Sr. H.O. 53
Leeds R.H.B. Reg. 54

PSYCHIATRY
South East Met. R.H.B. P.-t. Psychiatrist 47
St. Thomas's, S.E.1. Sr. Reg. 49
Bolton Dist. Gen. Sr. H.O. 51
Bristol United Hosps. & South Western R.H.B. Regs. 52
Cardiff. Whitchurch. Sr. H.O. 52
Dumfries. Crichton Royal Mental. H.O. 53
Greenock. Ravenscraig. Jr. H.M.O. 53
Leeds R.H.B. Sr. Regs. & Reg. 54/55
Liverpool. Sefton Gen. H.O.'s 55
Liverpool United Hosps. Regs. 55
Manchester R.H.B. Sr. Reg. 56
Manchester. Springfield. Jr. H.M.O. & Sr. H.O. 56
Manchester United Hosps. Reg. 56
Newcastle R.H.B. Sr. Regs. & Regs. 56/57
North East Met. R.H.B. Locum Sr. H.M.O. 48
Scotland. Western R.H.B. Regs. 59
Scotland. Western R.H.B. Sr. H.M.O. 48
Sheffield. Middlewood. Reg. 59
South Somerset Clinical Area. Sr. Reg. 59
Welsh R.H.B. Locum Cons. 48
Woodford Bridge, Essex. Claybury. Sr. H.O. 60
Yorkshire. East Riding H.M.C. Jr. H.M.O. 61
Canada. Ottawa Gen. Residencies 61

RADIOLOGY
Birmingham R.H.B. P.-t. Cons. 48
Birmingham R.H.B. Sr. Reg. & Reg. 50
Bristol United Hosps. & South Western R.H.B. P.-t. Regs. 52
Liverpool United Hosps. Reg. 55
Manchester R.H.B. Sr. H.M.O. 48
Canada. Gen. Hosp. Pembroke, Ont. Radiologist 48

RADIOTHERAPY
Marie Curie, N.W.3. H.O. 49
Cambridge. Addenbrooke's. Locum Sr. H.O. 52
Glasgow Royal Infy. Jr. H.M.O.'s 53
Newcastle United Hosps. Reg. 56
Nottingham Gen. Sr. H.O. or Reg. 57

SURGERY
Fulham, W.6. H.O.'s 49
Hackney, E.9. Pre-reg. H.O. 49
Lambeth, S.E.11. H.O. 49
London Jewish, E.1. H.O. 49
Memorial, S.E.18. H.O.'s 49
Mile End, E.1. H.O. 49
Royal Marsden, S.W.3. H.O. 49
St. Mary's, W.2. P.-t. Sr. H.O. 50
Wanstead, E.11. H.O. 50
Alexandria, Dunbartonshire. New Vale of Leven. H.O. 50
Alton Gen. Sr. H.O. 50
Ashford, Middx. H.O. 50
Ashton, Hyde and Glossop H.M.C. H.O. 50
Barnstaple. North Devon Infy. Pre-reg. H.O. 50
Birmingham Accident. H.O. 50
Birmingham R.H.B. Regs. 50
Blackpool. Victoria. Pre-reg. H.O. 51
Bury & Rossendale H.M.C. Pre-reg. H.O. 52
Caernarvon & Anglesey H.M.C. H.O.'s 52
Cambridge. Addenbrooke's. H.O. 52
Cardiff. Royal Hamadryad Gen. & Seamen's. Sr. H.O. 52
Carmarthen. West Wales Gen. Locum Sr. H.O. or H.O. 52
Castleford, Normanton & Dist. Sr. H.O. 53
Chelmsford & Essex. Locum Reg. & Pre-reg. H.O. 53
Chelmsford. St. John's. Locum Sr. H.M.O. 47
Chester-le-Street. Gen. H.O. 53
Colchester H.M.C. H.O.'s 53
Croydon. Mayday. Reg. 53
Derby. Derbyshire Royal Infy. Sr. H.O. 53
Durham. Dryburn. H.O. 53
Epping. St. Margaret's. Sr. H.O. 53
Gloucestershire Royal. H.O.'s 53
Gt. Yarmouth & Gorleston Gen. H.O. 54
Hastings. Royal East Sussex. Pre-reg. H.O. 54
Hastings. St. Helen's. Pre-reg. H.O. 54
Haverfordwest. Pembroke County War Mem. Sr. H.O. & H.O. 54
Hemel Hempstead. West Herts. Pre-reg H.O. 54
Hertford County. H.O. 54
Hove Gen. H.O. 54
Huddersfield Royal Infy. H.O. 54
Hull. Victoria Hosp. for Sick Child. Locum H.O. 54
Isleworth. South Middlesex. Pre-reg. H.O. 54
Leigh (Lancs) Infy. Reg. 55
Leigh (Lancs) Infy. Pre-reg. H.O. 55
Lincoln County. Sr. H.O. 55
Liverpool. Bootle. Sr. H.O. 55
Liverpool. Sefton Gen. H.O.'s 55
Liverpool United Hosps. Regs. 55
Liverpool United Hosps. Temp. Reg. 55
Maidenhead. Reg. 55
Maidstone. West Kent Gen. Pre-reg. H.O. 55
Manchester. Booth Hall Child's. Sr. H.O. 56
Manchester R.H.B. Reg. 56
Newcastle Gen. Sr. H.O. 56
Newmarket Gen. H.O. 57
North East Met. R.H.B. Reg. 57
Norwich. Norfolk & Norwich. H.O.'s 57
Nottingham Gen. Pre-reg. H.O.'s 57
Oxford R.H.B. Sr. Reg. 57
Plymouth. South Devon & East Cornwall. Sr. H.O.'s & Pre-reg. H.O. 57
Portsmouth Group H.M.C. Pre-reg. H.O.'s 58
Scotland. Western R.H.B. Sr. Reg. 59
Shrewsbury. Royal Salop Infy. Pre-reg. H.O. 59
Stafford. Staffordshire Gen. Infy. Pre-reg. H.O. 60
Stockport & Buxton H.M.C. H.O.'s 58
Stoke-on-Trent. Haywood. Jr. H.M.O. 58
Stoke-on-Trent. North Staffs Royal Infy. H.O. 58
Swansea. Sr. H.O. 59
Taunton H.M.C. Sr. H.O. 60
Torquay. Torbay. H.O. 60
Warrington Gen. H.O.'s 60
Warwick. H.O. 60
Watford. Peace Mem. Pre-reg. H.O. 60
Welsh R.H.B. Locum Cons. 48
Welsh R.H.B. Regs. 60
Weston-super-Mare Gen. H.O. 60
Winchester. Royal Hants County. H.O. 61
Windsor. King Edward VII. H.O. 61
Wolverhampton Group. H.O.'s 60
Worthing. H.O. 60

THORACIC SURGERY
Hosps. for Diseases of the Chest. Sr. H.O. & Sr. H.O. or Reg. 49
South East Regional Thoracic Surgery Unit, S.E.18. Sr. H.O. 49
Birmingham R.H.B. P.-t. Cons. 47
Blackpool. Victoria. Reg. or Sr. H.O. 51
Leeds United Hosps./R.H.B. Regs. 54
Wakefield. Pinderfields Gen. Sr. H.O.'s or Locum 60

TROPICAL MEDICINE
Liverpool. Sefton Gen. H.O. 55

PUBLIC APPOINTMENTS 61
GENERAL PRACTICE 62
MISCELLANEOUS 62

Academic and Educational

ROYAL COLLEGE OF SURGEONS OF ENGLAND

BRITISH POSTGRADUATE MEDICAL FEDERATION
(UNIVERSITY OF LONDON)
INSTITUTE OF BASIC MEDICAL SCIENCES

Applications are invited for the full-time posts of :—
(1) SENIOR LECTURER IN PATHOLOGY.
(2) SENIOR LECTURER (or LECTURER) IN PATHOLOGY

The successful candidates will be expected to take part in the teaching activities of the Department of Pathology. Time and facilities for research will be available. Applicants must be medically qualified and should preferably possess a special qualification in pathology and have had a general training in all normal branches of the subject. Salary will be within the University scales together with membership of the F.S.S.U. and family allowances. The commencing salary will be determined by the age, qualifications, and experience of the successful candidate.

Applications (3 copies), together with the names of 2 referees, should be sent not later than 4th July, 1955, to Mr. W. F. DAVIS, Secretary, Institute of Basic Medical Sciences, Royal College of Surgeons of England, Lincoln's Inn-fields, W.C.2, from whom further particulars may be obtained.

UNIVERSITY OF LONDON

POSTGRADUATE MEDICAL SCHOOL OF LONDON

The Department of Anæsthesia offers a COURSE OF INSTRUCTION for the academic year beginning 3RD OCTOBER, 1955, to a limited number of postgraduate students wishing to specialise in anæsthesia.

A comprehensive teaching programme has been established and the subjects covered include anatomy, pathology, pharmacology and physiology.

In addition to systematic lectures in anæsthesia, medicine and surgery, clinical training is provided in the wards and operating theatres and special provision is made for the demonstration of techniques not in common use.

Selected students are eligible for appointments as Senior House Officer and Registrar at Hammersmith Hospital.

The fee for the course is £75, plus £3 enrolment fee.

Further particulars may be obtained from the Dean, Postgraduate Medical School of London, Ducane-road, London, W.12.

THE UNIVERSITY OF SHEFFIELD

A REFRESHER COURSE for general practitioners will be held during the week beginning MONDAY, 19TH SEPTEMBER, and will be repeated during the following week. The fee for 1 week's attendance is 5 guineas, and accommodation at 1 of the University's Halls of residence can be arranged at a moderate additional charge. National Health Service Practitioners are (subject to certain conditions) eligible to have the course fee paid on their behalf and to receive also certain allowances (travelling expenses, subsistence, locum fees).

As the number who can be accepted is limited, inquiries and applications (stating whether or not the latter are made under the Scheme for National Health Service Practitioners, which week it is desired to attend, and whether residential accommodation is desired) should be addressed as soon as possible to the Dean of the Faculty of Medicine, 358, Mushroom-lane, Sheffield, 10.

MEDICAL POSTGRADUATE DEPARTMENT OF THE UNIVERSITY OF BRISTOL

A COURSE IN DIAGNOSTIC RADIOLOGY in preparation for the D.M.R.D. of the Conjoint Board (R.C.S. and R.C.P.) will begin in OCTOBER, 1955. The course, which will be half-time, will last for 2 academic years (i.e., until June, 1957). Instruction is given at the United Bristol Hospitals, and at other hospitals in the Bristol Clinical Area. The fee for the whole 2-year course is £52 10s. A limited number of half-time Registrarships are available for successful candidates for the course. (See separate advertisement.)

Further information and application forms for the course may be obtained from The Director of Radiology, Royal Infirmary, Bristol, 2. Applications must be submitted by 9th July, 1955.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE

FINAL F.R.C.S. COURSE—SEPTEMBER, 1955

A course will be held for the above examination on Tuesday and Thursday evenings at 6.30 P.M., starting on THURSDAY, 1ST SEPTEMBER and ending on TUESDAY, 25TH OCTOBER.

The course will consist of 16 clinical tutorial classes with short cases, followed by lecture-demonstrations on selected subjects. The course is not comprehensive. The class will be limited to 24 members.

Fee : 20 guineas, or to Bart's men 15 guineas.

Applications to the Sub-Dean, St. Bartholomew's Hospital Medical College, West Smithfield, E.C.1.

SHEFFIELD REGIONAL HOSPITAL BOARD

RESEARCH PRIZES

The Sheffield Regional Hospital Board offer 3 Research Prizes of £50 each, for the best written reports or reviews which make a contribution to medical knowledge, to Senior Registrars and Registrars who are or have been employed wholly or partly by the Board.

Further particulars of the conditions for the awards may be obtained from the Secretary to the Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to whom all persons who are interested are invited to apply. The closing date for entries is 1st October, 1956.

CHELSEA POLYTECHNIC

Manresa-road, London, S.W.3

DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY
Head : MARY F. LOCKETT, M.D.(LOND.), M.R.C.P., PH.D.(CANTAB.)

The Governing Body invite applications for the post of LECTURER or ASSISTANT (grade B) in Physiology or Pharmacology. Honours Degree essential. Duties include teaching and research. The successful candidate will be graded as Lecturer or Assistant (grade B) in accordance with qualifications and experience.

The salary scales attached to the various grades are as follows :—

(*a*) Lecturer : Men, £965–£1065 ; Women, £799 11s.–£1065, plus London allowance of £36 or £48 according to age. Placing on the scale will be in accordance with previous service in a similar capacity.

(*b*) Assistant grade B : Men, £525–£820 ; Women, £482 3s.–£820, plus additions for training and degree, and London allowance of £36 or £48 according to age. Placing on the scale will be in accordance with previous service in a similar capacity and/or industrial experience.

Further particulars and form of application may be obtained from the Clerk to the Governors, by whom applications should be received not later than 11th July, 1955.

THE ROYAL MEDICAL FOUNDATION OF EPSOM COLLEGE

The ANNUAL GENERAL MEETING of the Governors will be held at the offices of the Medical Defence Union, Tavistock House South, Entrance "D," Tavistock-square, London, W.C.1, on WEDNESDAY, 13TH JULY, 1955, at 3.30 P.M., when the names of newly-appointed Pensioners and Foundationers will be announced.

In addition to ordinary business the Agenda will include (1) the election/re-election of 10 Governors to the Council (2) amendment of By-law 12 to increase from £5 to £10 the value of cheques which shall not require the signatures of 2 members of the Council in addition to that of the Secretary or Bursar.

A copy of the full Agenda will be posted to any Governor on request to me.

By Order of the Council,
A. Y. CANN, Secretary.

The Secretary's Office, Epsom College, Surrey, 9th June, 1955.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 4TH JULY, 1955. The following Examination will be held in December, 1955.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS offers a POSTGRADUATE TRAVELLING FELLOWSHIP, value £250, to enable a doctor working in Scotland in the field of tuberculosis, to study abroad the treatment and control of tuberculosis.

Details from the Scottish Secretary, NAPT, 65, Castle-street, Edinburgh, 2. Closing date for applications : 15th July, 1955.

ROYAL FREE HOSPITAL SCHOOL OF MEDICINE. (UNIVERSITY OF LONDON.) Applications are invited for the ANNIE McCALL POSTGRADUATE FELLOWSHIP IN MIDWIFERY, value not less than £1000 tenable from 1st January, 1956, for 1 year in the first instance. Open to Women medical graduates for full-time research work in the Obstetrical and Gynæcological Unit at the Royal Free Hospital.

Applications (6 copies) to Warden and Secretary, 8, Hunter-street, W.C.1, not later than 1st September, 1955.

ROYAL FREE HOSPITAL SCHOOL OF MEDICINE AND THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE. Applications are invited from medical practitioners for the whole-time appointment of LECTURER IN PREVENTIVE AND SOCIAL MEDICINE. The D.P.H. or its equivalent is essential. The appointment will be for 2 years in the first instance. Salary £1000–£100–£1300 p.a., with family allowances and superannuation under the F.S.S.U. Duties will include undergraduate teaching at the Royal Free Hospital School of Medicine and tutorial assistance with postgraduate teaching at the London School of Hygiene and Tropical Medicine. The Lecturer will also be given opportunities for individual research and might be expected to guide a group of postgraduate students in field investigations and studies.

Applications should be submitted by letter to the Dean, London School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1, not later than 16th July, 1955.

ST. VINCENT'S HOSPITAL CLINICAL SCHOOL. UNIVERSITY OF MELBOURNE. Applications are called for the position of the JOHN HOLT DIRECTOR OF BIOCHEMICAL RESEARCH in the St. Vincent's Hospital School of Medical Research. The successful applicant will be in full charge of the Biochemical Research work but would merely have supervisory control over the hospital's routine Biochemical Department. The research laboratories have been newly built and occupy approximately 4500 square feet. Adequate funds are available for equipment. Initially the department staff will comprise the Director, 2 Assistant Biochemists and 2 Technicians. The assistant staff will be appointed on the advice of the Director. Study leave will be granted after a period of 5 years service. A limited amount of money for the attendance at important scientific meetings will be available. Salary is £3000 a year Australian currency ; superannuation according to F.S.S.U. Reasonable travelling expenses to Melbourne will be paid for successful applicant and family. Assistance will be given in finding suitable accommodation. Further details and plans of the laboratories may be seen at the office of the Secretary of the Association of the Universities of the British Commonwealth, Gordon-square, London, W.C.1, or at St. Vincent's Hospital.

Closing date for applications 20th August. Arrangements will be made to interview selected overseas applicants in London between 23rd and 30th August.

E. W. R. GRACE, Chief Executive Officer and Secretary.

THE UNIVERSITY OF LEEDS. Department of Surgery. Applications are invited for appointment as LECTURER IN SURGERY at a salary on the scale £1100–£100–£1700 a year, according to qualifications and experience.

Applications (3 copies), stating date of birth, qualifications and experience, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 27th July, 1955.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of ASSISTANT LECTURER, at an initial salary of £700 p.a., or LECTURER, at an initial salary within the range £1000–£1200 p.a., according to qualifications and experience in the Department of Surgery.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 16th July, 1955, by the undersigned, from whom further particulars of the conditions of appointment may be obtained. STANLEY DUMBELL, Registrar.

UNIVERSITY COLLEGE OF THE WEST INDIES. Applications are invited for LECTURESHIP IN CLINICAL PATHOLOGY. Duties will include clinical pathological (mainly hæmatology) work for the University College Hospital and instruction in clinical pathology of students working for the medical degrees of the University of London. Present salary scale (medically qualified): £950–£50–£1100–£50–£1400 p.a. Point of entry determined by qualifications and experience. Child allowance £80 p.a. per child (maximum £240 p.a.). F.S.S.U. Unfurnished accommodation at 5% basic salary. Passages paid for appointee and family on appointment, normal termination and study leave (once every 3 years). Duties to be assumed by 1st October, 1955.

Applications (10 copies), detailing qualifications and experience, and naming 3 referees, to be received by 31st July, 1955, by Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY COLLEGE OF THE WEST INDIES. Applications are invited for LECTURESHIP IN BACTERIOLOGY. Duties include routine bacteriological work in the University College Hospital and instruction of students working for medical degrees of University of London under the direction of the Professor of Pathology. Salary £950–£50–£1100–£50–£1400 p.a., point of entry determined by qualifications and experience. Child allowance £80 p.a. per child (maximum £240 p.a.). F.S.S.U. Unfurnished accommodation at rental of 5% of basic salary. Duties to be assumed as soon as possible.

Applications (10 copies), detailing qualifications and experience, and naming 3 referees, to be received by 2nd August, 1955, by Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Applications are invited for post of MEDICAL OFFICER to undertake care of staff and students of the University College, University College Hospital, and Ibadan branch of the Nigerian College of Arts, Science and Technology. Apart from general clinical experience the post offers good opportunities for the investigation of health problems in well-controlled indigenous communities. Student Health Service for the students of both Colleges and nurses of the Teaching Hospital to be set up. Candidates must hold a medical qualification registrable in the U.K. and have had at least 5 years experience including usual junior hospital appointments. Salary scale £1200–£100–£2250 p.a. Point of entry will depend on qualifications and experience. Free first-class passages for medical officer, wife, and up to 3 children (under 11 years) on appointment, annual leave and termination. Part-furnished accommodation at rent not exceeding 7.7% of salary. Child allowance: £50 p.a. per child for children resident in Nigeria (maximum £150 p.a.) or £100 p.a. per child for children resident elsewhere (maximum £300 p.a.). F.S.S.U. Outfit allowance £60 on first appointment.

Applications (10 copies), naming 3 referees and stating age, full qualifications and experience, to be received by 15th July by Secretary, Inter-University Council for Higher Education Overseas, 1, Gordon-square, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY OF THE WITWATERSRAND, Johannesburg, SOUTH AFRICA. Applications are invited for appointment as SENIOR LECTURER (cerebral palsy) on the staff of the University Department of Physiology. The Senior Lectureship has been established in conjunction with the Transvaal Association for the Care of Cerebral Palsy (Spastic), and the appointment will be for an initial period of 5 years in the first instance, but may be renewed for a further period thereafter. The successful applicant must be medically qualified, have a knowledge of physiology and electronics, and be prepared to conduct research into the problem of cerebral palsy and allied problems. The incumbent will be required to lecture and do research work not only in the Department of Physiology but also at the Forest Town School for Spastics. He will also be required under the direction of the Head of the Department, to consult with the honorary medical staff as well as with the other staff of the Forest Town School for Spastics. The substantive salary will be according to the scale £1100–£50–£1450, and in addition a married man will receive cost-of-living allowance at the rate of £234 p.a. Membership of the University Institutions' Provident Fund is compulsory. Membership of the Staff Medical Aid Fund is also compulsory in the case of those who are eligible for such membership. The successful applicant will be required to assume duty on 1st January, 1956, or as soon as possible thereafter.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in South Africa and London, is 30th September, 1955.

AUCKLAND UNIVERSITY COLLEGE. (University of NEW ZEALAND.) POSTGRADUATE SCHOOL OF OBSTETRICS AND GYNÆCOLOGY. The University College Council invites applications from medical practitioners for the position of ASSISTANT to the Professor of Obstetrics and Gynæcology, National Women's Hospital, Auckland, New Zealand, with the status of a Senior Lecturer of the University of New Zealand. Applicants should have higher qualifications in obstetrics and gynæcology and have been qualified for not less than 10 years and have had not less than 5 years practical experience in the specialty. The appointment is a full-time appointment for a period of 2 years from the date of taking up duties. It is thereafter renewable, at the discretion of the Council in consultation with the Auckland Hospital Board, for a further 2 years. The person appointed will be expected to take up his duties on 1st January, 1956, or as soon thereafter as can be arranged. The salary will be that payable to a Senior Specialist, i.e., £1690, rising to £1940 p.a., plus an additional payment of £81 7s. recently authorised by Court Order. The commencing rate within this scale will be fixed according to qualifications and experience. The scale provides for 2 annual increments of £100 and a final increment of £50. A charge (at present £110 p.a.) will be made for the rent of a small unfurnished flat. An allowance is made towards travelling expenses.

Further particulars and information as to the method of application should be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications in New Zealand and London is 31st July, 1955.

Hospital Services : Senior Appointments

GUY'S HOSPITAL, S.E.1. The Board of Governors invite applications for the appointment of DIRECTOR of the Department of Clinical Pathology. The appointment is of Consultant status in the National Health Service and will be on a maximum part-time sessional basis. Applicants are required to hold higher qualifications.

Applications (1 copy), together with the names of 3 referees, should be submitted to reach the Superintendent, Guy's Hospital, London, S.E.1, not later than 16th July, 1955. In accordance with Statutory Instrument No. 1259 of the National Health Service regulations, canvassing members of the Board or Advisory Appointments Committee will lead to disqualification.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT NEUROLOGIST (1 half-day a week), Lister Hospital, Hitchin (350 Beds) and Bedford General Hospital (437 Beds), fortnightly visit to each. Hospitals may be visited by direct appointment.

Applications by 4th August, 1955.

(2) OPHTHALMOLOGIST (Senior Hospital Medical Officer grade), Paddington School Treatment Centre, 12, Maida-avenue, W.2. 2 half-days a week (Monday and Friday mornings). Candidates may apply for either or both sessions. Clinic may be visited by arrangement with the Divisional Medical Officer, 313, Harrow-road, W.9.

Applications by 2nd August, 1955.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment, for 4–5 notional half-days, of REGIONAL PSYCHIATRIST who will act as adviser to the Board under the general supervision of the Senior Administrative Medical Officer. These sessions do not include work of a clinical nature. Salary in accordance with nationally negotiated terms.

Applications, with the names of 3 referees, should be received by the Senior Administrative Medical Officer, 11, Portland-place, London, W.1, by 9th July, 1955.

CHELMSFORD. ST. JOHN'S HOSPITAL. Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER in Surgery required to work at above Hospital for period 27th August–10th September.

Applications to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time Locum SENIOR HOSPITAL MEDICAL OFFICER in Geriatrics required immediately for hospital and domiciliary visiting within the Bradford Geriatric Service.

Applications, stating age, qualifications and details of experience, together with names of 3 referees, to the Secretary, Park-parade, Harrogate, by 9th July, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Resident Whole-time ASSISTANT CHEST PHYSICIAN AND DEPUTY MEDICAL SUPERINTENDENT (Senior Hospital Medical Officer scale) at the Castle Hill Sanatorium, Cottingham, East Yorks. The person appointed will have charge of beds under the direct supervision of the Medical Superintendent and visiting Chest Consultants and will also be required to attend occasionally at Raywell and Driffield Sanatoria and Chest Clinics in the Hull area. There is a Thoracic Surgical Unit of 51 Beds at the adjacent Castle Hill Hospital.

Applications (12 copies), stating age, qualifications and details of appointments held, showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 9th July, 1955.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Part-time CONSULTANT THORACIC SURGEON (1 notional half-day weekly). Duties at Wordsley Hospital, Stourbridge; other hospitals in the Dudley and Stourbridge, Litchfield, Sutton Coldfield and Tamworth Groups of hospitals. Wide experience specialty and higher qualification essential.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 11th July, 1955.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Stoke Group

CONSULTANT RADIOLOGIST (part-time—6 notional half-days weekly). Duties mainly at City General Hospital, Stoke-on-Trent (845 Beds). Wide experience specialty, higher qualification required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 11th July.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Whole-time NON-RESIDENT ASSISTANT RADIOLOGIST (Senior Hospital Medical Officer) to the Stockport and Buxton Hospitals (Stockport Infirmary, Stepping Hill Hospital, Stockport, Devonshire Royal Hospital, Buxton, and Buxton Hospital, &c.). Wide experience and D.M.R.D. essential appointee to live in Stockport area, 15th July, 1955.

(*b*) Whole-time TUBERCULOSIS PHYSICIAN (Senior Hospital Medical Officer), Rochdale and District Hospitals (Wolstenholme Pulmonary Hospital, Springfield Sanatorium, Sparthfield Clinic, &c.) to work under general guidance of a Consultant. Previous experience of thoracic medicine and tuberculosis essential, higher qualification desirable. The appointment may be made in conjunction with the Local Health Authorities concerned for whom the appointee would carry out duties in connection with prevention, care and after-care. 18th July, 1955.

(*c*) Whole-time NON-RESIDENT ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) to the West Manchester Hospital Centre based on the Group Laboratory at Park Hospital, Davyhulme, near Manchester. Experience in all branches of hospital pathology desirable. Successful candidate will work under general guidance of a Consultant. 12th July, 1955.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Full-time SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications, giving details of past experience and qualifications, together with the names of 3 referees, to be addressed to the undersigned as early as possible. (Special application forms can be obtained on request.)

F. J. CABLE, Secretary, United Manchester Hospitals.

NEWCASTLE REGIONAL HOSPITAL BOARD. Gates- HEAD HOSPITAL MANAGEMENT COMMITTEE. (Population 169,015.) SENIOR CASUALTY OFFICER (whole-time). Duration of post not exceeding 4 years. Duties, subject to supervision of Senior General Surgeon and Orthopædic Surgeon, to organise and handle the casualty work throughout the Group, the main centre being at Queen Elizabeth Hospital. Salary scale £1500–£50–£1950 (subject to adjustment if under 32 years). Appointee to reside in close proximity to Queen Elizabeth Hospital.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

Full-time Locum ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade). Single accommodation available.

Applications to Medical Superintendent, Severalls Hospital, Colchester, Essex.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT PSYCHIATRIST at the Royal Scottish National Institution, Larbert. A house is available. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time DENTAL SURGEON to the Tunbridge Wells Group of hospitals, for orthodontic work amounting to 4 notional half-days a week, mainly at the Queen Victoria Hospital, East Grinstead, Sussex. The post will carry the status of Senior Hospital Dental Officer. Applicants may visit the Hospital concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, by 16th July, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Locum Tenens Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) for the West Dorset Group of hospitals for approximately 3 months from 27th June. Remuneration in accordance with the terms and conditions of hospital medical staff.

Applications, with names of 3 referees, immediately to Area Secretary, South West Metropolitan Regional Hospital Board, Highcroft, Romsey-road, Winchester.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens TRAUMATIC AND ORTHOPÆDIC SURGEON (Senior Hospital Medical Officer) required Caerphilly Miners' Hospital 4th–30th July, 1955.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT PSYCHIATRIST, St. David's Hospital, Carmarthen, July, 1955, for approximately 3 months.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT SURGEON required at following hospitals :—

PEMBROKE COUNTY WAR MEMORIAL, Haverfordwest, July, 1955.
TREDEGAR GENERAL, 25th July–27th August, 1955.
EBBW VALE, 5th September–8th October, 1955.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

WELSH REGIONAL HOSPITAL BOARD. Required immediately, Whole-time Locum Tenens SENIOR CASUALTY OFFICER, Barry Accident Hospital, for approximately 3 months.

Application, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

CANADA. GENERAL HOSPITAL, Pembroke, Ontario. Required, a PATHOLOGIST, also a full-time certified RADIOLOGIST for a 200-bed General Hospital.

Please give personal particulars with qualifications and experience. Applications to Mother Superior.

NEW ZEALAND. WAIKATO HOSPITAL BOARD, HAMILTON, NEW ZEALAND. Applications are invited from Junior or Senior Specialists for the position of Full-time ANÆSTHETIST at Waikato Hospital, Hamilton, New Zealand. Waikato Hospital has some 650 Beds, and the Department of Anæsthesia at present comprises 4 part-time Anæsthetists and 2 Anæsthetic Registrars, as well as the full-time Anæsthetic Specialist. The position is a non-resident one and will be vacant as from 1st October, 1955. Salary in accordance with hospital employment regulations and within the range of £NZ1290–£NZ1590 p.a. for a Junior Specialist and £NZ1690–£NZ2190 p.a. for a Senior Specialist. The salary scale is increased by a cost-of-living bonus amounting to £81 7s. p.a. A furnished 2-bedroom residence is available for a limited term.

Conditions of appointment, accompanying explanatory memorandum and form of application obtainable from the High Commissioner for New Zealand, 415, Strand, London, W.C.2. Ref. No. 3/6/7. Completed applications close in New Zealand on 30th July, 1955, and must reach the High Commissioner's Office, London, not later than 16th July, 1955.

WESTERN AUSTRALIA. ROYAL PERTH HOSPITAL. The Board of Management invites applications for the position of Whole-time ASSISTANT DIRECTOR OF ANÆSTHESIA. Salary range £2270–£2320–£2390–£2440 (Australian) p.a., with periodical cost-of-living adjustment. Commencing salary rate is dependent upon qualifications and experience.

Applications, detailing age, marital status, qualifications, experience, war service, &c., must reach the undersigned by 30th September, 1955. A memorandum of further particulars concerning this position will be supplied on request.

JOSEPH GRIFFITH, Administrator.

Hospital Services : Junior Appointments

ANNIE McCALL MATERNITY HOSPITAL, Jeffrey's-road, S.W.4. Applications are invited from registered Women medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON (post recognised for D.Obst.R.C.O.G.). Appointment is for a period of 6 months. Vacant on 1st August.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 recent testimonials, should be sent to the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, within 7 days of the appearance of this advertisement.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—309 Beds.) HOUSE SURGEON (gynæcology and obstetrics), post recognised for pre-registration purposes.

Applications, stating age, experience, qualifications and copies of 2 testimonials, to the Hospital Secretary by 2nd July, 1955.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of MEDICAL CHIEF ASSISTANT (half-time). Salary within the Senior Registrar grade. The appointment is for 1 year with eligibility for reappointment. Candidates must hold the M.R.C.P. Diploma or the M.B. of a university.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 9th July, 1955, to—

KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in Pædiatric Department. Post recognised for D.C.H. Appointment for 6 months from 1st August, 1955.

Applications, with copy each of 2 testimonials, to Medical Director by 2nd July, 1955.

DULWICH HOSPITAL, East Dulwich-grove, London, S.E.22. Applications invited for appointment as SENIOR HOUSE OFFICER (obstetrics and gynæcology). The Hospital is associated with Kings College Hospital Medical School for teaching purposes and the duties include care of teaching bedpatients. Vacant from 22nd July, 1955.

Apply, giving age, qualifications and experience, with copies of recent testimonials or names of 2 referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, not later than 6th July, 1955.

GUY'S HOSPITAL, S.E.1. Applications are invited for the appointment of REGISTRAR in the B.M.R. and Endocrine Department (first year, 6 sessions per week). Duties to commence on 1st October, 1955.

Forms of application, obtainable from the Superintendent, Guy's Hospital, should be forwarded not later than 30th June, 1955.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. Qualified medical practitioners, including pre-registration candidates, are invited to apply for the following vacancies :—

HOUSE SURGEON (2 vacancies). Appointments recognised for F.R.C.S.

HOUSE PHYSICIAN (3 vacancies).

Appointments commence 1st August, 1955, are resident and limited to 6 months.

Applications by 6th July, 1955, on forms obtainable from the Hospital Secretary (L.120).

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE SURGEON to the Orthopædic Department. Resident post. Vacant 1st August, 1955. Post recognised for F.R.C.S. Candidates may visit the Hospital by arrangement with the Hospital Secretary.

Applications by 6th July, 1955, on forms obtainable from the Hospital Secretary (L.121.).

HACKNEY HOSPITAL, London, E.9. (General—844 Beds.) Applications for the 6 months appointment of Pre-registration HOUSE SURGEON (post vacant 1st August ; recognised for F.R.C.S.), should reach Secretary, above address, by 9th July, quoting HH/PHS.

HOSPITALS FOR DISEASES OF THE CHEST. The LONDON CHEST HOSPITAL. A vacancy occurs for RESIDENT SURGICAL OFFICER, appointment for 6 months, with prospect of renewal. Post graded as Senior House Officer or Registrar according to qualifications and experience. Previous surgical experience necessary.

Applications, stating age, qualifications with dates, and previous appointments held, should be forwarded at once to—

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

HOSPITALS FOR DISEASES OF THE CHEST. London CHEST HOSPITAL. RESIDENT HOUSE SURGEON required at the Hospital's Country Branch, near Hitchin and Letchworth, Herts. The post is graded as Senior House Officer and the appointment, which provides excellent opportunities for experience in thoracic surgery, is for 6 months.

Applications from registered medical practitioners, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should be forwarded at once to—

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. DEPARTMENT OF PHYSICAL MEDICINE. Applications are invited for the post of REGISTRAR in Physical Medicine for 1 year from 1st October, 1955, in the first instance. Applicants should preferably have had experience in general medicine and hold the M.D. or M.R.C.P.

Applications, together with the names of 2 referees, to be submitted by 9th July, 1955, to S. W. BARNES, House Governor and Secretary, from whom further particulars can be obtained.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for the post of MEDICAL REGISTRAR, vacant in August. The appointment will be for 1 year in the first instance. A higher qualification in medicine is desirable. Canvassing will disqualify, but candidates are invited to visit the Hospital.

Forms of application (enclosing stamped addressed envelope) from the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom completed forms should be returned not later than 15th July, 1955.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited from pre-registration and registered medical practitioners, for appointment as RESIDENT HOUSE SURGEON, vacant 23rd July, 1955. The appointment is for 6 months, and is recognised for the F.R.C.S.

Apply to the Physician-Superintendent.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the post of RESIDENT HOUSE PHYSICIAN, falling vacant on 1st August, 1955. Salary in accordance with the National Health Act.

Forms of application to be obtained from the Physician-Superintendent at the Hospital. Stamped addressed envelope should be enclosed.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) HOUSE SURGEON (pre- or post-registration) required for 6 months.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy), vacant immediately.

Applications, with copies of testimonials, to the Administrative Officer.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) HOUSE SURGEON (pre- or post-registration). Post vacant 19th July, 1955.

Application forms, obtainable from Physician-Superintendent, to be returned by 1st July, 1955, with copies of not more than 3 testimonials.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON at The National Hospital, Queen-square, W.C.1. This post carries the grade of Registrar.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 2nd July, 1955.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospital, Queen-square, W.C.1.

MEMORIAL HOSPITAL, Shooters Hill, Woolwich, S.E.18. Applications are invited for the appointment of PÆDIATRIC HOUSE PHYSICIAN. The post entails routine ward and out-patient work as well as experience with neo-nates, and includes general and casualty duties. Recognition for D.C.H. pending. This post is not recognised for pre-registration purposes.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18, enclosing copies of 2 recent testimonials.

MEMORIAL HOSPITAL, Shooters Hill, Woolwich, S.E.18. HOUSE SURGEONS. 2 posts vacant 16th July. Recognised for F.R.C.S. Approved for Pre-registration Service.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

NEW END HOSPITAL, London, N.W.3. Applications are invited for the position of HOUSE PHYSICIAN (pre-registration), endocrinology. Now vacant.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, and the name of 1 referee, to Surgeon-Superintendent by 4th July, 1955.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN for 6 months. Vacancy from 1st August, 1955.

Applications, stating age, qualifications, and with not more than 3 testimonials, to House Governor, not later than 30th June, 1955.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. JUNIOR CASUALTY OFFICER (Male or Female ; House Officer third post) required for 6 months commencing as soon as possible.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 9th July, 1955.

ROYAL FREE HOSPITAL. Applications are invited from registered Men and Women medical practitioners for the appointment of RESIDENT ASSISTANT PATHOLOGIST at the above Hospital. Salary in accordance with the Ministry of Health scale for House Officers. The appointment is for 6 months in the first instance, subject to possible reappointment for a further 6 months. Duties to commence on 1st September, 1955.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 8th July, 1955.

ROYAL MARSDEN HOSPITAL (formerly Royal Cancer Hospital), Fulham-road, London, S.W.3. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (resident) to commence duty on 11th August. Salary £525 p.a. The post is tenable for 6 months.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent not later than 6th July.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer grade), with duties in the E.N.T. Department vacant 12th August, 1955. Post recognised for F.R.C.S.

Applications to be sent to the Hospital Secretary by 6th July, 1955.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT. (46 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER, vacant early August. Recognised for F.R.C.S. 6 months appointment and may be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of GYNÆCOLOGICAL HOUSE SURGEON at the above Hospital, vacant 18th July, 1955, for 6 months. Recognised for the M.R.C.O.G.

Application forms from the Secretary.

ST. ANN'S GENERAL HOSPITAL, N.15. (756 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) for duty in the Infectious Diseases Unit and other general duties, for a period of 6 months commencing 5th August, 1955.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, Tottenham, N.15, to be returned by 16th July, 1955.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (General—192 Beds.) Applications are invited from registered or provisionally registered medical practitioners for the post of HOUSE PHYSICIAN for 6 months commencing 9th July, 1955.

Applications, with 2 recent testimonials, to be sent to the Hospital Secretary by 2nd July, 1955. Applications may be sent in pending the qualifying examination results being known, and providing these are available at the date of interview, which will be approximately first week in July.

ST. NICHOLAS HOSPITAL, Plumstead, London, S.E.18. CASUALTY OFFICER. Recognised for F.R.C.S. 6 months resident appointment (not pre-registration). Salary £525 p.a., less £125 p.a. for residence. There is also a Senior House Officer in the department.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR in the Department of Psychological Medicine which has an inpatient unit and outpatient diagnostic and treatment clinics. 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 2nd July, 1955.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time OUTPATIENT SURGICAL ASSISTANT for 6 notional half-days per week (Monday P.M., Wednesday A.M. and P.M., Friday A.M. and P.M., Saturday A.M.), graded Senior House Officer. The appointment will be for a first period of 12 months and the successful candidate will be required to commence duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service, gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 13th July, 1955.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. Casualty OFFICER (Senior House Officer grade), non-resident, vacancy mid-August.

Applications, naming 2 referees, to Medical Superintendent.

WANSTEAD HOSPITAL, Hermon Hill, E.11. (191 Beds.) Applications are invited for the post of CASUALTY OFFICER graded Senior House Officer, vacant 8th July, 1955. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee Forest Group, Langthorne-road, E.11.

WANSTEAD HOSPITAL, Hermon Hill, Wanstead, E.11. (191 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant 6th August, 1955.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group, Hospital Management Committee, Langthorne-road, E.11.

WANSTEAD HOSPITAL, Hermon Hill, London, E.11. (191 Beds.) HOUSE SURGEON required. Post vacant now. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WEST HAM CHEST CLINIC, Balaam-street, Plaistow, E.13. Applications are invited for the part-time post of CLINICAL ASSISTANT at the above Chest Clinic—6 sessions per week. Applicants should have considerable experience in respiratory tuberculosis and diseases of the chest. The appointment is subject to review in 1 year. Remuneration at rate of £175 p.a. per session.

Applications, with names of 3 referees, to the Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 8th July, 1955.

WESTMINSTER CHILDREN'S HOSPITAL. Westminster HOSPITAL TEACHING GROUP. Required for 2 months, Locum RESIDENT MEDICAL OFFICER (Registrar) for duty as soon as possible.

Applications to the Secretary, Westminster Children's Hospital, Vincent-square, S.W.1.

WHITTINGTON HOSPITAL, London, N.19. Applications are invited for the post of HOUSE PHYSICIAN (general medicine), third post held, now vacant. Post recognised for M.D. (Lond.).

Applications, giving age, qualifications and experience, together with copies of 2 recent testimonials and name of 1 referee, to the Medical Superintendent, Whittington Hospital, Highgate Hill, N.19, by 4th July, 1955.

ALEXANDRIA, DUNBARTONSHIRE. NEW VALE OF LEVEN HOSPITAL. Applications are invited for the posts of RESIDENT HOUSE SURGEON and RESIDENT HOUSE PHYSICIAN in the new Vale of Leven Hospital of 156 Beds which will open in August, 1955.

Applications in writing to be submitted to the Medical Superintendent, Vale of Leven Hospital, Alexandria, Dunbartonshire.

ALTON GENERAL HOSPITAL. (131 Beds.) Winchester GROUP OF HOSPITALS. HOUSE SURGEON (Senior House Officer grade) required to assist in steadily expanding surgical work, including casualty at this Hospital which is being developed. Post vacant now.

Applications, with copies of 2 testimonials, to be sent to the Group Secretary, Royal Hampshire County Hospital, Winchester.

AMENDED ADVERTISEMENT

ALTON HOSPITALS, Alton, Hampshire. South West METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Anæsthetics (Registrar grade) required for the Lord Mayor Treloar Hospital (350 Beds) and Henry Gauvain Hospital (117 Beds), combined with work at the Alton General Hospital (131 Beds) in the Winchester Group of hospitals. Besides orthopædic and general surgery, there are weekly sessions of gynæcological, plastic, and E.N.T. surgery. The Lord Mayor Treloar Hospital patients are mostly children. The successful candidate will be required to live in Alton.

Forms of application, obtainable from the Group Secretary, Royal Hampshire County Hospital, Winchester, to be completed and returned not later than 4th July.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. HOUSE SURGEON required at Ashton-under-Lyne General Hospital. Preference will be given to pre-registration applicants. Recognised for F.R.C.S. (Eng.).

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, as soon as possible.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. HOUSE PHYSICIAN required at Ashton-under-Lyne General Hospital. Preference given to pre-registration applicants.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs, as soon as possible.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for general surgical and medical duties. Post not suitable for pre-registration candidates.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, immediately.

AYLESBURY. STOKE MANDEVILLE HOSPITAL. RESIDENT HOUSE PHYSICIAN for the Department of Medicine. Recognised pre-registration post. Applications from registered practitioners will be considered. Post vacant immediately.

Apply, with copies of 2 testimonials, to Administrative Officer.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDE-VILLE HOSPITAL. RESIDENT HOUSE PHYSICIAN for Neurological Unit (part of the Department of Neurology of the United Oxford Hospitals). Vacant 1st August. Pre-registration post but open to registered practitioners, in which case the status up to Senior House Officer may be awarded.

Apply, with copies of 2 testimonials, to Administrative Officer, as soon as possible.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.) HOUSE SURGEON (pre-registration). Post vacant mid-July.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BIRMINGHAM ACCIDENT HOSPITAL, Birmingham, 15. (215 Beds.) RESIDENT HOUSE SURGEON, vacant end of June. Recognised for F.R.C.S. Appointment for 6 months in General Accident Service and (at applicant's request) includes period in 32-Bedded Burns Unit.

Apply Administrator.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. HOUSE SURGEON required. Appointment for 6 months, but renewable. Hospital carries resident staff of 5 and provides a 2-year course of instruction. Recognised for the D.O. (England) and F.R.C.S. (England) in Ophthalmology. Wide experience available in all branches, including surgery.

Detailed applications by 30th June to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE SKIN HOSPITAL, INPATIENTS' DEPARTMENT, George-road, BIRMINGHAM, 15. SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience (required mid-August). Modern well-equipped Inpatients' Department, providing facilities for study of skin diseases. Required to assist Consultant at outpatient clinics.

Applications, with copies of 2 recent testimonials, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Birmingham (Dudley Road) Group, Dudley Road Hospital, Birmingham, 18**

(*a*) REGISTRAR in E.N.T. Surgery for Birmingham and Midland Ear and Throat Hospital. Resident. Required August. Recognised for D.L.O. and F.R.C.S.

(*b*) REGISTRAR in Anæsthetics for Dudley Road Hospital (780 Beds). Recognised for D.A. and F.F.A.R.C.S. Duties at other Hospitals in Group.

(2) **Birmingham (Selly Oak) Group, Oak Tree-lane, Birmingham, 29**

(*a*) REGISTRAR (Chief Assistant to Clinical Director), for Birmingham Accident Hospital (215 Beds). General surgical experience and F.R.C.S. essential, orthopædic experience desirable. Over 52,000 acute accidents admitted annually. Post offers surgical experience and training exclusively in general accident surgery.

(*b*) REGISTRAR in General Surgery. Duties at Little Bromwich and Solihull Hospitals. Higher qualification desirable. Resident at Little Bromwich Hospital.

(3) **No. 20 Group, Stoney Stanton-road, Coventry**

REGISTRAR in Anæsthetics for Coventry and Warwickshire Hospital (354 Beds). Experience specialty essential. Recognised for F.F.A.R.C.S.

(4) **Shrewsbury Group, Royal Salop Infirmary, Shrewsbury**

(*a*) RESIDENT MEDICAL REGISTRAR for Shrewsbury Group (145 Beds). House available.

(*b*) REGISTRAR in Radiology (radiodiagnosis) for Shrewsbury Group and Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry. Resident or non-resident.

(5) **Stafford Group, 13, Foregate-street, Stafford**

REGISTRAR in Medicine. Duties mainly at Staffordshire General Infirmary, Stafford (175 Beds). Experience specialty and higher qualification desirable.

Application forms from Group Secretaries, to be returned before 11th July, 1955. Candidates may visit Hospitals.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

Selly Oak Hospital, Birmingham (1059 Beds)

Whole-time SENIOR REGISTRAR in Radiology. Diploma in Diagnostic Radiology essential. Department serves large general hospital and group of subsidiaries (including children, maternity, eye and E.N.T.) and provides experience throughout whole range of specialty. Successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals under the interchange scheme for Senior Registrars agreed between the 2 Boards.

Application forms from Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 11th July, 1955.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade). The post is tenable for 1 year. The appointment is recognised for the purpose of taking the F.F.A.R.C.S. examinations.

Application forms from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. GENERAL HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (Registrar grade). The post is tenable for 1 year in the first instance. Candidates must have held a resident appointment and should have the M.R.C.P. (London).

Forms of application may be obtained from, and should be returned not later than 2nd July, 1955, to the Secretary, The United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) in the Department of Bacteriology and Clinical Pathology at the General Hospital. The appointment is tenable for 12 months.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. HOUSE OFFICER required. Pre-registration considered.

Detailed applications, with copies of 2 recent testimonials, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 13. SORRENTO MATERNITY HOSPITAL. (112 Beds, including 24 premature baby cots.) OBSTETRIC HOUSE SURGEON. Recognised for D.Obst. R.C.O.G. Hospital affiliated to Birmingham Medical School for training of students. Vacant 1st August.

Apply Obstetrician by 29th June, 1955.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SENIOR HOUSE OFFICER. Appointment to commence as soon as possible. Salary £745 p.a.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) THE MANCHESTER REGIONAL HOSPITAL BOARD invite applications from registered practitioners for appointment on the staff of the Department of Thoracic Surgery. The successful applicant will be graded either REGISTRAR or SENIOR HOUSE OFFICER according to qualifications and experience. The post offers excellent opportunities for gaining experience in a Consultant staffed hospital and department.

Applications, together with the names of 2 referees or references, should be sent to the Group Secretary, Victoria Hospital, Blackpool.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) RESIDENT HOUSE SURGEON (Surgical Department). Pre-registration post now vacant. Recognised for F.R.C.S. examination. This is a busy general hospital with a large Outpatient Department and the post offers excellent opportunities for general experience under Consultant Surgeons.

Applications, with names and addresses of referees, should be sent to the Hospital Secretary.

BOLTON DISTRICT GENERAL HOSPITAL. (Townleys BRANCH PSYCHIATRIC UNIT.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Psychiatry (resident). Unit is attached to a General Hospital. Consultant Psychiatrist in charge. All forms of modern treatment in use. Post offers excellent facilities for anyone desiring to specialise in psychiatry and attend D.P.M. course at Manchester University. Hospital also recognised for London and Irish D.P.M. Outpatient clinics in existence. Post now vacant and tenable for 12 months.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOLTON. THE ROYAL INFIRMARY. (237 Beds.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER in Orthopædic Surgery, vacant August, tenable for 12 months and recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration intern) required for general medicine for post now vacant at the above Hospital of 289 Beds (including 61 acute medical, 34 pædiatric, 6 chest and 188 chronic).

Applications, with copies of testimonials, to the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, Bournemouth, within 14 days of the appearance of this advertisement.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE GROUP. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Orthopædic Surgery for the above Hospital Group consisting of 17 hospitals with 1593 Beds. The orthopædic work is conducted mainly at the 2 major hospitals of the Group, viz., Royal Victoria Hospital, Bournemouth, and Poole General Hospital, with 100 orthopædic beds and large outpatient departments covering both traumatic and non-traumatic orthopædics in all branches, in children and adults.

Forms of applications, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Bournemouth, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

BRADFORD A AND B HOSPITAL MANAGEMENT COMMITTEES. JUNIOR HOUSE OFFICER required for newly formed active Geriatric Admission Unit. The major portion of the duties will be carried out at St. Luke's Hospital, Bradford.

Applications, stating age, nationality, qualifications and experience, and copies of testimonials, to the Secretary, Royal Infirmary, Bradford.

BRADFORD ROYAL INFIRMARY. Resident Senior HOUSE OFFICER (medicine and pathology). This is a post of a supervisory nature in 2 acute general medical wards with a Junior House Officer combined with duties in the Department of Pathology consisting of general hæmatology and post-mortem work. Vacant now. Salary £745 p.a., less £150 p.a.

Applications, stating age, nationality, qualifications, and experience with copy testimonials, to Secretary.

BRADFORD. ROYAL EYE AND EAR HOSPITAL. HOUSE SURGEON (ophthalmology), vacant 16th July. Recognised for D.O.M.S. and F.R.C.S. Salary according to Whitley Council (MDB) rates.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. (Beds—Maternity 125, Gynæcology 105.) HOUSE OFFICER (obstetrics/gynæcology), vacant 1st August. Recognised for D.Obst.R.C.O.G. and M.R.C.O.G. Salary £425–£525 p.a., less £125 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL AND WOODLANDS HOSPITAL, RAWDON, near LEEDS.

SENIOR HOUSE OFFICER to Orthopædic Unit, with duties at both hospitals, vacant now. Salary £745 p.a., less £150 p.a. residential emoluments.

JUNIOR HOUSE OFFICER to Orthopædic Unit with duties at both hospitals, vacant 1st July. Salary £425–£525 p.a., less £125 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to the Secretary, Bradford Royal Infirmary.

BRAINTREE. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of SENIOR HOUSE OFFICER for Non-pulmonary Tuberculosis Unit of approximately 120 Beds, particularly for skeletal and renal tuberculosis. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRENTWOOD, ESSEX. NORTH EAST METROPOLITAN REGIONAL BLOOD TRANSFUSION CENTRE. Applications invited for JUNIOR HOSPITAL MEDICAL OFFICER for new Centre to be opened soon. Non-resident. Male or Female. Permanent appointment. The work mainly concerns the bleeding of Donors, but opportunity will be given for gaining experience in Blood Transfusion Serology.

Apply immediately, giving full details, and names of 2 referees, to Medical Director, c/o Brentwood Group Office, High Wood Hospital, Brentwood, Essex, from whom further details may be obtained.

BRIGHTON, 7. BEVENDEAN HOSPITAL, Bear-road. (165 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital for Chest Diseases. The post will include some duties at Chest Clinics in the area. Salary at the rate of £775–£50–£1075 p.a.

Applications, stating age, qualifications, nationality, previous posts held, together with the names of 2 referees, should be sent to the Secretary, Brighton and Lewes Hospital Management Committee, Royal Sussex County Hospital, Brighton, 7, by 11th July.

BRIGHTON. SUSSEX EYE HOSPITAL, Eastern-road, BRIGHTON, 7. (56 Beds.) SENIOR HOUSE SURGEON (Senior House Officer) required. Recognised for F.R.C.S. and D.O.

Applications, stating age, qualifications and experience, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Orthopædic and Traumatic Surgery. This post becomes vacant on 1st October, 1955. The appointment will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Mount Gold Orthopædic Hospital and the Traumatic Centre at the General Hospitals, Plymouth. The post is recognised for the F.R.C.S. (England).

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 16th July, 1955.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in General Medicine. This post becomes vacant on 26th September, 1955. The appointment will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year at St. Martin's Hospital and at the Royal National Hospital for Rheumatic Diseases, Bath; and to undertake duties at other hospitals in the Group as circumstances require.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 16th July, 1955.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for 2 joint appointments of REGISTRAR in Psychiatry. The successful candidates will be based on the Bristol Mental Hospital Group (Barrow and Fishponds Hospitals, Bristol Neurosis Centre and Bristol Day Hospital). The appointments, which may be resident or non-resident, will be held for 1 year in the first instance and be renewable for a further year. The posts will offer training to enable the holders to obtain the D.P.M. The successful candidates will, therefore, have opportunities of gaining experience in general and special branches of psychiatry. The posts also offer excellent opportunities for special postgraduate experience in psychiatry and for research work for the preparation of a thesis for higher qualifications. There are Departments of Electro-encephalography, Experimental and Applied Psychology and Biochemical and Endocrinological Research. There is an extensive psychiatric library at Barrow Hospital.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 16th July, 1955.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of SENIOR REGISTRAR in Orthopædic and Traumatic Surgery. The appointment will be for a period of 1 year in the first instance, renewable annually up to a maximum of 4 years. The successful candidate will be appointed to work for the first year mainly at the Princess Elizabeth Orthopædic Hospital, Exeter, and its associated clinics, and to visit other hospitals in the Exeter Clinical Area as determined by the Regional Board from time to time.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 16th July, 1955.

BRISTOL-COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the regional Neurosurgery Department, vacant end of July. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis. Recognised for F.R.C.S.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BRISTOL. HAM GREEN HOSPITAL, Pill, near Bristol. HOUSE PHYSICIAN (recognised pre-registration post), vacancy July, 1955.

Apply, Resident Physician.

BRISTOL. UNITED BRISTOL HOSPITALS. South-Western Regional Hospital Board. REGISTRARS in Diagnostic Radiology. Applications are invited for 3 half-time Registrarships jointly to the above Boards. These posts are intended as training posts and are open to candidates accepted for the University of Bristol Course in Diagnostic Radiology. (See separate advertisement.) The appointments are available for 1 year in the first instance, from 1st October, 1955, and are renewable for a second year. The duties will be integrated with the University Course of Instruction.

Applications, with names of 2 referees, should be sent not later than 9th July, 1955, to the Director of Radiology, Royal Infirmary, Bristol, 2.

BROMLEY GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics (qualified minimum 1 year) for duty at group hospitals, residing at Bromley Hospital, required immediately for 12 months. Recognised for D.A. and F.F.A.R.C.S. Deduction for residence £150 p.a.

Apply, naming 3 referees, to Administrative Officer, Bromley Hospital, Bromley, Kent.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. ROSSENDALE GENERAL HOSPITAL. FAIRFIELD GENERAL HOSPITAL. Applications are invited for the posts of SENIOR HOUSE OFFICER (gynæcology and obstetrics); 1 at each Hospital.

Apply, stating age, qualifications and experience, together with the names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL, BURY, LANCS. HOUSE OFFICER (surgery) pre-registration appointment. A vacancy exists at the present time.

Apply, stating age, qualifications and experience, to—
H. WILKINSON, Group Secretary.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Non-RESIDENT SENIOR REGISTRAR to the E.N.T. Department required as soon as possible. Appointment for 1 year in first instance, reviewable annually up to a maximum of 4 years.

Apply, with full particulars and names of 3 referees, to Secretary by 2nd July.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House OFFICER (E.N.T. Department) for 6 months from 25th August. Pre-registration (surgical) or post-registration applications will be considered.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 9th July. Interviews mid-July.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Resident ANÆSTHETIC SENIOR HOUSE OFFICER for 1 year from 9th July. Locum would be considered. Anæsthetic experience essential.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to Secretary, by 29th June, 1955.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Locum SENIOR HOUSE OFFICER in Radiotherapy, for approximately 2 months from 1st September, with possibility of appointment for up to 1 year from beginning of November. Previous experience an advantage.

Apply, with full particulars and copies of 3 testimonials, to Secretary by 9th July.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 28th August. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 9th July. Interviews 15th July.

CAERNARVON AND ANGLESEY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

HOUSE SURGEON—Caernarvon and Anglesey General Hospital, Bangor.

HOUSE SURGEON—Llandudno General Hospital.

The appointments are for a period of 6 months. Salary and conditions of service in accordance with those approved by the Ministry of Health.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Group Secretary, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of appearance of this advertisement.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court Annexe, a unit of 25 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. Recognised for M.R.C.O.G. 6 months appointment. Post now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF. GLAN ELY HOSPITAL, Fairwater, Cardiff. (240 Beds.) SENIOR HOUSE OFFICER (resident) required at above Hospital for treatment of pulmonary (Thoracic Unit) and all forms of non-pulmonary tuberculosis.

Form of application from Group Secretary, Cardiff Hospital Management Committee, at above address.

CARDIFF. ROYAL HAMADRYAD GENERAL AND SEAMEN'S HOSPITAL. CARDIFF HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (surgical) required at above Hospital. Post covers 44 Beds—genito-urinary, general surgery, and outpatients. Department under care of Consultants from United Cardiff Hospitals.

Form of application from Group Secretary, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in Child Health at Llandough Hospital. The post, which is resident, falls vacant on 1st October.

Application forms can be obtained from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary.

CARDIFF ISOLATION HOSPITAL. Senior House OFFICER (resident) required at above Hospital.

Apply immediately to Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. WHITCHURCH HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Psychiatry (Male or Female) from practitioners who have held general house appointments. Opportunities exist for gaining experience in all branches of psychiatry. Salary according to Whitley scale, less £150 p.a. if resident.

Forms of application to be obtained from the Physician-Superintendent, to whom they should be returned, together with the names of 2 referees.

CARLUKE. LAW HOSPITAL. (746 Beds.) Board of MANAGEMENT FOR SOUTHERN LANARKSHIRE HOSPITALS. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in Anæsthetics.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Group Medical Superintendent, Law Hospital, Carluke, Lanarkshire, by 1st July, 1955.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum Tenens SENIOR HOUSE OFFICER or HOUSE OFFICER (surgical). Senior House Officer salary—£414 10s. per week or House Officer £9 10s. per week (less residential emoluments). Locum required immediately until end of July.

Applications, stating age, qualifications, experience and nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (medical) which will become vacant at the beginning of August next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CHELMSFORD HOSPITAL MANAGEMENT COMMITTEE. Resident Locum Tenens REGISTRAR to the Department of Pathology in Chelmsford from the middle of August. Previous experience in pathology essential. Higher qualifications not necessary.

Apply Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. Locum Tenens REGISTRAR in Surgery required to work at the above Hospital for period 30th July–27th August.

Applications to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 13th July and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CASTLEFORD, NORMANTON AND DISTRICT HOSPITAL. RESIDENT SURGICAL OFFICER required. Graded Senior House Officer. Married accommodation available.

Applications to Secretary, Gt. Northern House, Salter-row, Pontefract, Yorks.

CHEPSTOW, MONMOUTHSHIRE. PLASTIC SURGERY JAW INJURIES AND BURNS CENTRE, ST. LAWRENCE HOSPITAL. (100 plastic surgery, 50 orthopædic beds.) SENIOR HOUSE OFFICER in Plastic Surgery required. Previous experience in specialty not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and provides extensive experience. There is another Senior House Officer in plastic surgery and also a Senior House Officer in orthopædics. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary, 64, Cardiff-road, Newport, Mon.

CHESTER-LE-STREET. GENERAL HOSPITAL. (204 Beds.) HOUSE OFFICER (general medicine). Post vacant 1st August, 1955. Recognised for pre-registration purposes.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

CHESTER-LE-STREET. GENERAL HOSPITAL. (204 Beds.) HOUSE OFFICER (general surgery). Post vacant 1st August, 1955. Recognised for pre-registration purposes.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester (188 Beds)

HOUSE OFFICER (surgical). First, second, third, or pre-registration post ; tenable for 6 months.

Black Notley Hospital, Braintree, and Essex County Hospital, Colchester

HOUSE SURGEON (first, second, third, or pre-registration post), tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

COVENTRY AND WARWICKSHIRE HOSPITAL. (354 Beds.) SENIOR HOUSE OFFICER (casualty—60 Beds), recognised F.R.C.S., vacant 14th August.

Applications to Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (354 Beds.) SENIOR HOUSE OFFICER in Ophthalmology. Recognised D.O. Good experience in inpatient and outpatient work. Resident.

Applications to Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

COVENTRY AND WARWICKSHIRE HOSPITAL. (354 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery (60 Beds). Resident.

Applications to Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) House PHYSICIAN (pre-registration) for period of 6 months from 29th July.

Application form obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) House SURGEON (resident) for Fracture and Orthopædic Unit required immediately for 6 months. Post approved for pre-registration candidates.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

CROYDON. MAYDAY HOSPITAL, Thornton Heath, SURREY. (618 Beds.) CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (whole-time, resident or non-resident). Post vacant 1st July. Candidates should have good medical and surgical background and possession of higher surgical qualification an advantage. There are 2 Surgical Teams at Hospital. Post recognised for F.R.C.S. examination.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned by 4th July.

CROYDON. MAYDAY HOSPITAL (618 Beds) AND ST. MARY'S MATERNITY HOSPITAL. Locum Tenens SENIOR OBSTETRIC HOUSE OFFICER (resident) for period 18th–31st July inclusive. Previous experience essential.

Apply, giving full particulars of qualifications and experience to—

GEORGE A. PAINES, Secretary,
Hospital Management Committee,
General Hospital, Croydon.

DERBY. CITY HOSPITAL. House Physician (pre-registration) or SENIOR HOUSE OFFICER, vacant end of July.

Apply, stating full details with copies of 2 recent testimonials, to the Medical Superintendent, as soon as possible.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (casualty), vacant 10th July, 1955. Recognised for F.R.C.S.

Apply, with copies of 2 testimonials, to Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 7th August, 1955.

Apply, with copies of 2 testimonials, to Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (general surgery), vacant 18th July.

Apply, with copies of 2 recent testimonials, to Hospital Secretary.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited for the post of CASUALTY OFFICER with anæsthetic duties. Post offers wide experience in anæsthetics under supervision of Visiting Consultant Anæsthetist. House Officer grade post, recognised for Pre-registration Service, now vacant. 4 residents on staff. Salary £425–£475, with £125 deduction for residential emoluments. Appointment for 6 months.

Applications, enclosing copies of 2 recent testimonials, to the Secretary, Noble's Hospital, Douglas, Isle of Man.

DUMFRIES. CRICHTON ROYAL MENTAL HOSPITAL. Applications are invited from registered medical practitioners for the post of HOUSE OFFICER which is now vacant. The post is recognised under the Medical Act, 1950, for Pre-registration Service. Salary according to national scale. Previous experience in psychiatry not required. Every facility for training in psychiatry on the most modern lines.

Forms of application to be obtained from the Physician-Superintendent to whom these should be returned with copies of testimonials.

DURHAM. DRYBURN HOSPITAL. (305 Beds.) House OFFICER (general medicine). Post vacant 1st August, 1955. Recognised for pre-registration purposes.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DURHAM. DRYBURN HOSPITAL. (305 Beds.) House OFFICER (general surgery). Post vacant 1st August, 1955. Recognised under F.R.C.S. regulations and for pre-registration purposes.

Applications, with names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Chest Medicine, Cambridge Area Chest Clinic. The post offers wide experience in all aspects of chest diseases. Higher medical qualification and wide experience in chest diseases and tuberculosis desirable.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 4th July, 1955. Candidates invited to visit Clinic by direct arrangement with Consultant Chest Physician, Chest Clinic, Castle Hill, Cambridge.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum REGISTRAR in Orthopædics required 15th–28th August, 1955. Non-resident.

Apply Group Secretary with names of 2 referees.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgery) as Casualty Officer and Orthopædic House Surgeon. Immediate vacancy. Recognised training post for F.R.C.S. Busy general hospital with easy access to London. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 recent testimonials, to the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex, immediately.

GLASGOW (near). CANNIESBURN HOSPITAL AND SCHAW HOME, BEARSDEN. 1 JUNIOR HOSPITAL MEDICAL OFFICER required for duties at both of these Hospitals. Canniesburn Hospital has 132 Beds ; 42 for private patients, 10 for maxillo-facial surgery, and 80 for pre-convalescent patients from Glasgow Royal Infirmary. Schaw Home has 70 Beds used for the aged and chronic sick. Resident at Canniesburn Hospital.

Apply, giving 3 names for reference, not later than 2nd July, 1955, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW ROYAL INFIRMARY. There are 2 vacancies for JUNIOR HOSPITAL MEDICAL OFFICERS in Radiotherapy based at Glasgow Royal Infirmary.

Write, giving 3 names for reference, not later than 1st July, 1955, to the Secretary and Treasurer, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. In the term beginning 1st August, vacancies for HOUSE OFFICERS (pre-registration) exist in the following units : Medicine (Acute Geriatrics), Dermatology.

Applications, giving the names of 2 referees, should be addressed to the Medical Superintendent.

GLOUCESTERSHIRE ROYAL HOSPITAL, Southgate-street, GLOUCESTER. (225 Beds.) HOUSE SURGEONS (2) required. Posts, 1 vacant now, 1 vacant 27th July, are recognised for Pre-registration Service. Excellent operative experience available.

Applications, naming 2 referees, should be sent to the Group Secretary.

GREENOCK, RAVENSCRAIG (MENTAL AND GENERAL) HOSPITAL. (472 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER. Resident post. Mental and General experience to be gained. Hospital is recognised as a training centre for the D.P.M. Examination.

Applications, in writing, to the Physician-Superintendent as soon as possible.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, DENE SIDE, GREAT YARMOUTH. HOUSE PHYSICIAN required. Post vacant 1st August, 1955. The post is a pre-registration post at a salary of £425, £475, or £525 p.a. according to experience, less £125 p.a. for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience, with names of 2 referees, to Hospital Secretary.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, DENE SIDE, GREAT YARMOUTH. HOUSE SURGEON (Male or Female) required. Post vacant 1st August, 1955. The Hospital is staffed by a Consultant General Surgeon and a Consultant E.N.T. Surgeon, and is regularly visited by Consultant staff from the Norfolk and Norwich Hospital. The post is a pre-registration post at a salary of £425, £475, or £525 p.a. according to experience, less £125 p.a. for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience with names of 2 referees, to Hospital Secretary.

GRIFFITHSTOWN, MONMOUTHSHIRE. COUNTY HOSPITAL. (Recognised D.Obst.R.C.O.G. 253 Beds.) SENIOR HOUSE OFFICER in Obstetrics and Gynæcology required about 11th July. There is a modern Maternity Unit of 32 Beds, also 14 gynæcological beds. Obstetrical Registrar also resident. Salary £745, less £130 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary, 64, Cardiff-road, Newport, Mon.

HALIFAX. ST. JOHN'S HOSPITAL. (382 Beds.) Senior HOUSE OFFICER in Geriatrics and General Medicine required. Post vacant early July. Salary £745 p.a., with deduction of £130 p.a. for board, residence, &c.

Applications to the Group Secretary, Royal Halifax Infirmary, Halifax.

HARROGATE AND DISTRICT GENERAL HOSPITAL. (253 Beds. Recognised for D.Obst.R.C.O.G.) Applications are invited for the resident post of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant from 1st August, 1955.

Applications, together with the names of 2 referees, should be sent to the Hospital Secretary within 10 days.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON required. Pre-registration post. Vacant 26th July. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (489 Beds.) HOUSE SURGEON required. Resident, pre-registration post, vacant now. Male or Female. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (489 Beds.) HOUSE PHYSICIAN (resident) required for pædiatrics and general medicine. Post vacant beginning August. National scale of salary.

Apply to Hospital Administrator.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical) which will become vacant at the end of July next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical) which will become vacant at the end of July next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (medical) which will become vacant at the end of July next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general—first, second, or third post), to commence 6th July, 1955. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration). Post vacant 18th July, 1955.

Applications, mentioning 2 names for reference, should be sent to the Hospital Secretary.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer) required. Post vacant now.

Applications, stating 2 names for reference, should be sent to the Hospital Secretary.

HEMEL HEMPSTEAD. WEST HERTS AND ST. PAUL'S HOSPITALS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. OBSTETRICAL AND GYNÆCOLOGICAL REGISTRAR (resident) required at above Hospitals which may be visited by direct appointment. Post vacant early October.

Application form obtainable from, and returnable to, Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (General—705 Beds.) CASUALTY OFFICER (resident) required. Whole-time duties under Medical Director will include dealing with casualties, admissions to hospital and such other duties as may be required. Post recognised for F.R.C.S. Salary on Junior Hospital Medical Officer scale.

Apply, stating age, nationality, qualifications, experience and enclosing copies of not more than 3 recent testimonials, to Medical Director by 11th July.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Resident CASUALTY HOUSE OFFICER for duty with the Accident Service and as Orthopædic House Surgeon required for 6 months in the first instance on 1st July, 1955. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent immediately to the Medical Administrator, Lister Hospital, Hitchin, Herts.

HOVE GENERAL HOSPITAL, Sussex. (75 Beds. 3 Resident Medical Officers.) HOUSE SURGEON AND CASUALTY OFFICER (recognised for F.R.C.S.—not pre-registration) required mid-July, 1955. Salary £525, less £125 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer within 7 days of the appearance of this advertisement.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum HOUSE SURGEON required, 27th June–10th July, 1955. Duties include ward work, outpatient clinics, and an occasional session in the Casualty Department.

Applications to be sent to the Secretary.

ISLEWORTH. SOUTH MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE OFFICER to assist on Surgical Unit and Infectious Diseases Department. Post vacant now.

Applications, stating age, nationality, qualifications obtained, with copies of up to 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 19th July, 1955.

KINGSTON GROUP HOSPITAL MANAGEMENT COM-MITTEE. SOUTH WEST METROPOLITAN REGION. Applications are invited for the appointment of REGISTRAR (whole-time) at the Kingston Group Laboratory, Kingston Hospital. The Group Laboratory offers facilities for gaining experience in all branches of pathology. The appointment, which is non-resident, is for 1 year in the first instance.

Forms of application may be obtained from the Group Committee, 35, Coombe-road, Kingston-on-Thames (a foolscap stamped addressed envelope to be enclosed), and the completed forms returned within 14 days of the appearance of this advertisement.

LEEDS. UNITED LEEDS HOSPITALS/LEEDS REGIONAL HOSPITAL BOARD. REGISTRARS in Thoracic Surgery (2 similar appointments). The first year will normally be at the Regional Thoracic Centre, Pinderfields General Hospital, Wakefield (56 Beds), which is under the charge of the Consultants to the Teaching Hospital, and the second year at the General Infirmary at Leeds. Successful candidates will be required to be resident whilst at Pinderfields Hospital. Married quarters available.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 7th July, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

(a) Huddersfield Group (approximately 225 Beds in the surgical specialties) (resident or non-resident).

(b) Bradford A and B Groups (preferably resident). Recognised for the F.F.A. R.C.S. Approximately 700 Beds in the surgical specialties. Establishment 1 Senior Registrar and 2 Registrars.

Obstetrics and Gynæcology

Duties at Halifax General Hospital with additional duties at the Royal Halifax Infirmary (130 obstetric and 50 gynæcological beds). Recognised for M.R.C.O.G. (resident).

Plastic Surgery

St. James's Hospital, Leeds (non-resident). Special Plastic and Maxillo-facial Unit (72 Beds).

Psychiatry

Broadgate Hospital, Beverley (600 Beds). Accommodation for single person (resident/non-resident). If desired facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 30th June, 1955.

LEEDS REGIONAL HOSPITAL BOARD. Senior Registrar vacancies.

Psychiatry

(*a*) 5 sessions as Trainee Specialist in Child Psychiatry at the University Department of Psychiatry at the General Infirmary at Leeds and the remainder of the time in mental deficiency at the Westwood Hospital, Bradford, and associated colonies. Accommodation available for a single person. May be non-resident, in which case the person appointed should reside in Bradford. Candidates must hold the D.P.M. or equivalent qualification.

(*b*) Stanley Royd Hospital, Wakefield (2000 Beds), and associated clinics. Accommodation for a single person is available. It is anticipated that the successful candidate will undertake 2 clinical sessions (which may include research) in association with the Department of Psychiatry of the University of Leeds. Candidates must hold the D.P.M. or equivalent qualification.

Applications, stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Parkparade, Harrogate, by 7th July, 1955.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment, which is recognised for the D.A. and the F.F.A.R.C.S., will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment, which is recognised by the Royal College of Surgeons for Fellowship, will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, namely, £745 p.a. with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEIGH INFIRMARY, Leigh, Lancashire. House Surgeon (pre-registration post).

Applications to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

LEIGH INFIRMARY, The Avenue, Leigh, Lancashire. (102 Beds.) REGISTRAR in General Surgery (resident) for the above acute general hospital. Post vacant 21st August, 1955, recognised for the F.R.C.S.

Applications to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery and E.N.T., vacant 1st August, 1955. The post is recognised for D.L.O.

Applications, together with names for reference, should be forwarded to R. W. HOWICK, Group Secretary.

LINCOLN. ST. GEORGE'S HOSPITAL. Lincoln No. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital. Duties include assisting in the care of medical, surgical, and geriatric patients. Married accommodation is available.

Applications, giving full particulars together with 3 names for reference, should be addressed to—

R. W. HOWICK, Group Secretary.

County Hospital, Lincoln.

LIVERPOOL, 6. NEWSHAM GENERAL HOSPITAL. (1304 Beds.) Applications are invited for the following appointments which may be resident or non-resident and occur on 11th July next :—

HOUSE PHYSICIAN to the tuberculosis wards, with some duties in general medicine. Junior Hospital Medical Officer or Senior House Officer grading according to qualifications and experience.

HOUSE PHYSICIAN in General Medicine. Pre-registration or Senior House Officer according to qualifications and experience.

Apply to the Physician-Superintendent at the Hospital as soon as possible.

LIVERPOOL. BOOTLE HOSPITAL. Applications are invited for the post of SENIOR HOUSE SURGEON, available now.

Apply to Secretary, North Liverpool Hospital Management Committee, Walton Hospital, Liverpool, 9, stating age, experience, qualifications, and names of 2 referees.

LIVERPOOL, 15. SEFTON GENERAL HOSPITAL. (995 Beds.) Applications are invited from suitably qualified medical practitioners for the following appointments at the above Hospital which will become vacant on 1st September, 1955.

2 SENIOR HOUSE OFFICERS (medical).
2 SENIOR HOUSE OFFICERS (orthopædic).

The appointments will be for a period of 12 months and may be either resident or non-resident. The salary will be at the rate of £745 p.a.

Application forms may be obtained from the undersigned to whom they should be returned not later than Tuesday, 12th July, 1955. GARNET CHAPLIN, Secretary to the Committee.

LIVERPOOL, 15. SEFTON GENERAL HOSPITAL. (995 Beds, 116 Cots.) Applications are invited for the following resident appointments which will become vacant at the above-named Hospital on 1st September, 1955, and will be for a period of 6 months. These posts are approved as pre-registration posts.

6 HOUSE PHYSICIANS (general).
2 HOUSE PHYSICIANS (psychiatric).
2 HOUSE SURGEONS (general).
2 HOUSE SURGEONS (obstetric).
1 HOUSE PHYSICIAN (tropical).

The terms and conditions of service will be in accordance with the regulations of the Ministry of Health.

Application forms may be obtained from the undersigned to whom they should be returned not later than Thursday, 7th July, 1955.

GARNET CHAPLIN, Secretary to the Committee,
South Liverpool Hospital Management Committee.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL. Applications are invited for a post of MEDICAL REGISTRAR to the Cardiological Department for the period 1st October, 1955–30th September, 1956. Annual reappointment until completion of the normal period of training will be considered without the need for further application.

Apply within 14 days of the appearance of this advertisement on forms obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a temporary post of REGISTRAR in Surgery at the Liverpool Royal Infirmary for the period to 30th September, 1955.

Apply by 7th July, 1955, on forms obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a temporary post of SENIOR HOUSE OFFICER in Ophthalmology at St. Paul's Eye Hospital for the period to 30th September, 1955.

Apply by 7th July, 1955, on forms obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for posts as REGISTRARS for the period 1st October, 1955–30th September, 1956. Annual reappointment until completion of the normal period of training will be considered without the need for further application. The following are the posts to be filled :—

General Medicine (1 post).
General Surgery (3 posts).
Psychiatry (2 posts).
Obstetrics and Gynæcology (1 post).
Radiology (1 post).
Pathology (1 post).
Otorhinolaryngology (1 post).
Ophthalmology (2 posts).
Anæsthetics (1 post).
Pædiatrics (2 posts).

Apply within 14 days of the appearance of this advertisement on forms obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LOUTH. COUNTY INFIRMARY. (215 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post, now vacant, of SENIOR HOUSE OFFICER (orthopædic and casualty).

Applications, stating age and experience, together with names of 2 referees, to the Hospital Secretary.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (98 Beds.) HOUSE PHYSICIAN (Male or Female) required on or about 15th July, 1955. The post is recognised for Pre-registration Service and the Hospital is regularly visited by Consultant staff from the Norfolk and Norwich Hospital. Salary £425, £475, or £525 p.a., according to experience, less £125 for residence. Alternatively, as SENIOR HOUSE PHYSICIAN, salary £745 p.a., less £150 for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to Hospital Secretary.

LYMINGTON HOSPITAL, Lymington, Hampshire. (95 Beds.) RESIDENT SENIOR HOUSE OFFICER (medical) required mid-July.

Applications, with copies of testimonials, should be forwarded as soon as possible to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. RESIDENT SURGICAL REGISTRAR required. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 30th June.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration posts :—

(*a*) HOUSE SURGEON.
(*b*) HOUSE PHYSICIAN.

6 months appointments. Posts vacant July, 1955. Salary at the rate of £425, £475, or £525 according to experience. A deduction at the rate of £125 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Orthopædic Surgery, to the Blackpool and Fylde Group of Hospitals, with main duties at Victoria Hospital, Blackpool.

Applications, together with names and addresses of 2 referees, should be sent to the Group Secretary, Blackpool and Fylde Hospital Management Committee, Victoria Hospital, Blackpool.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of REGISTRAR in Chest Diseases in the Ashton, Hyde and Glossop Group and Oldham and District Group of hospitals. The post offers wide experience in both outpatient clinics and pulmonary hospitals.

Applications to the Group Secretary, Ashton, Hyde and Glossop Hospital Management Committee, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Blackburn AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT REGISTRAR (obstetrics/gynæcology) required. Post recognised for M.R.C.O.G. Based on Queen's Park Hospital, Blackburn (a general hospital with 83 obstetrical/gynæcological beds), with duties at Blackburn Royal Infirmary and Accrington Victoria Hospital. Accommodation for married man and small family available if required.

Application forms obtainable from, and returnable to, the Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

MANCHESTER REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Psychiatry. The person appointed will be required to attend Consultant Psychiatric Clinics and take part in the treatment of inpatients and outpatients at hospitals in the Bolton area in association with the Consultant Psychiatrist. Arrangements may later be made for the successful candidate to undertake a period of duty at Prestwich Mental Hospital, near Manchester.

Application forms obtainable from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, should be returned by 11th July, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD. North AND MID CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. ST. ANNE'S E.N.T. HOSPITAL, BOWDON, CHESHIRE. (53 Beds.) REGISTRAR required (preferably resident) for post now vacant.

Applications to be forwarded with 2 recent testimonials, to the Group Secretary, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the non-resident post of REGISTRAR to the E.N.T. Department of the Stockport and Buxton Hospital Management Committee. The main duties will be at Stockport Infirmary with some duties at other hospitals in the Group.

Applications, stating age, experience and qualifications, together with the names of 2 referees, to be forwarded to the undersigned, immediately.

H. G. PRICE, Group Secretary.

59B, Shaw-heath, Stockport, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in General Surgery to the Blackpool and Fylde Group of hospitals, with main duties at Victoria Hospital, Blackpool (348 Beds). The post which is vacant on 1st August, 1955, is recognised under the F.R.C.S. regulations. The appointment offers an excellent opportunity of gaining practical experience in general and emergency surgery to suitably qualified candidates.

Applications, stating age, qualifications and experience, together with the names of 3 referees, should be sent to the Group Secretary, Blackpool and Fylde Hospital Management Committee, Victoria Hospital, Blackpool.

MANCHESTER, 8. SPRINGFIELD HOSPITAL. SpringFIELD AND SWINTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the undermentioned appointments at this mental hospital of over 750 Beds :—

JUNIOR HOSPITAL MEDICAL OFFICER. Appointment will be for 4 years in the first instance. Facilities will be granted for attendance at the Course for the D.P.M. of the University of Manchester.

Applications, giving details of age, experience, &c., should be accompanied by the names of 3 referees.

SENIOR HOUSE OFFICER.

Applications, giving details of age, experience, &c., should be accompanied by the names of 2 referees.

The Hospital is closely associated with the Department of Psychiatry of the University of Manchester and is approved for the D.P.M. (Eng.) and R.M.P.A. The admission-rate is substantial, a wide range of clinical material is available. Most forms of modern treatment are used : there are associated outpatient clinics. In each case accommodation is available for a single person, although permission to live out may be granted in certain circumstances. Terms and conditions of the National Health Service apply.

Further particulars can be obtained from, and the Hospital may be visited by arrangement with the Medical Superintendent, to whom applications should be addressed as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to the Department of Psychiatry, to commence as soon as possible. Applicants must have held house appointments and should possess a higher qualification. Previous experience in psychiatry essential. Whole-time appointment for 12 months, renewable.

Application to be made on form obtainable from the undersigned and to be returned not later than 9th July, 1955.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER (medical) to commence on 1st October, 1955. Whole-time resident post, for 6 months, renewable for a second and possibly a third 6 months. Residence £155 p.a. The successful applicant will be attached to the Rheumatism Research Centre, but will have some general duties as deputy Resident Medical Officer.

Applications to be made on form obtainable from the undersigned and to be returned not later than 9th July, 1955.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics. Applicants must have had previous hospital experience in general medicine and surgery, and in obstetrics. The post is recognised for purposes of the M.R.C.O.G. examination. The duties involve clinical responsibility for mothers and babies, and supervision of the work of pre-registration House Officers is also included. The appointment is for 12 months from 1st September, 1955. National scale.

Application forms may be obtained from the undersigned and returned not later than 2nd July, 1955.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER, 9. BOOTH HALL CHILDREN'S HOSPITAL. (380 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgical). Post vacant now. Duties will be mainly general surgery.

Applications, with usual particulars and copies of 2 recent testimonials, to the Medical Superintendent as soon as possible.

MANSFIELD. HARLOW WOOD ORTHOPÆDIC HOSPITAL. (328 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL OFFICER (Registrar grade) required. Post becomes vacant 20th August. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th July, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident post of SENIOR HOUSE OFFICER (general surgery), tenable for 12 months, becomes vacant on 1st July, 1955.

Applications, with 1 copy of 2 testimonials, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, as soon as possible.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF NEUROLOGICAL SURGERY. SENIOR HOUSE OFFICER (resident or non-resident). The post affords excellent experience in neurology and would be of value to candidates preparing for a higher qualification. No surgical work is involved, the duties being purely medical and no previous neurosurgical experience is required. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of REGISTRAR in the Department of Radiotherapy at the Royal Victoria Infirmary. The appointment will be for 1 year in the first instance and subject to the terms and conditions of service of hospital medical staff. Opportunities will be given for study for the D.M.R.T.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the 2 SENIOR HOUSE OFFICER posts (preferably resident) at the Newcastle Eye Hospital (31 Beds) and the Eye Unit at Walker Clinical Annexe (21 Beds). The Hospital is recognised for the Diploma of Ophthalmology. Previous experience in ophthalmology will be an advantage. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, with the names of 3 referees, should be sent to the Hospital Secretary, Eye Hospital, St. Mary's-place, Newcastle upon Tyne, as soon as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Newcastle upon Tyne Hospital Management Committee (Newcastle General Hospital 838 Beds including 100 obstetrical and gynæcological beds)

Locum SENIOR REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (whole-time), non-resident. Appointment for about 3 months. The General Hospital is a teaching unit.

Sunderland Tuberculosis Administrative Area (population 318,827)

REGISTRAR CHEST PHYSICIAN (whole-time). Unit comprises modern chest clinic in Sunderland Royal Infirmary, with 125 local tuberculosis and non-tuberculosis beds. Appointee will also have duties at Seaham Hall Sanatorium, particularly in connection with a 42-Bed Thoracic Surgical Unit.

South Shields Hospital Management Committee

REGISTRAR ANÆSTHETIST (whole-time). Post recognised for F.F.A.R.C.S.

REGISTRAR PHYSICIAN (whole-time). Married or single accommodation available.

Northallerton Hospital Management Committee

REGISTRAR ORTHOPÆDIC SURGEON (whole-time). Accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. St. NICHOLAS' HOSPITAL, GOSFORTH, NEWCASTLE UPON TYNE. (1190 Beds.) SENIOR REGISTRAR PSYCHIATRIST (whole-time), single or married. Furnished or unfurnished accommodation available.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.
St. Luke's Hospital, Middlesbrough
REGISTRAR PSYCHIATRIST (whole-time), resident. Single, or married, furnished or unfurnished accommodation available.
Newcastle General Hospital—Department of Psychological Medicine
REGISTRAR PSYCHIATRIST (whole-time).
SENIOR REGISTRAR PSYCHIATRIST (whole-time). Appointment for 1 year only, to commence 1st October, 1955.
Department under clinical direction of Professor of Psychological Medicine, University of Durham, and is at present temporarily at St. Mary's Hospital, Stannington, Northumberland.
Applications, with names and addresses of 3 referees, to Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer), vacant early July. The post is recognised for the D.A. and the F.F.A.R.C.S. and offers wide experience; this is a busy general hospital with Departments in General, Orthopædic, Gynæcological, Thoracic, and Plastic Surgery.
Applications, stating age, nationality and qualifications, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, 2 SENIOR HOUSE OFFICERS, duties to commence on 30th June and 31st July. Salary and conditions of service in accordance with Ministry regulations.
Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Hogarth Radiotherapy Centre. A vacancy exists at the above Centre for a SENIOR HOUSE OFFICER in Radiotherapy or REGISTRAR (if in possession of Part I, D.M.R.T.) in Radiotherapy. The Centre is recognised as a Training School for both Part I and II D.M.R.T. (Royal Colleges of London) in conjunction with the University of Nottingham, and instruction for this examination can be given to those interested and suitable. The position offers excellent experience for persons studying for other post-graduate degrees.
Apply as soon as possible, stating age, qualifications and experience, together with names of 3 referees, to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER, vacant 28th June. The post is recognised for the D.A. and the F.F.A.R.C.S. This is a busy general hospital, giving experience in all branches of surgery.
Applications, stating age, nationality and qualifications, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. E.N.T. Department. Applications are invited for the post of SENIOR E.N.T. HOUSE OFFICER for the above Hospital. This appointment is recognised for the D.L.O. and the F.R.C.S. examinations. Salary and conditions of service in accordance with Ministry regulations. Duties to commence as soon as possible. Although the post is normally resident, consideration will be given to any applicant who desires to live out.
Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited for the post of CLINICAL PATHOLOGIST (Senior House Officer grade), resident or non-resident, duties to commence as soon as possible. Previous experience in pathology not essential. Opportunities for training in all branches of clinical pathology are afforded in a department serving over 1200 beds. Salary and conditions of service in accordance with Ministry Regulations.
Applications, stating names and addresses of 3 referees, to be received within 2 weeks of this advertisement, addressed to—
HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEONS (pre-registration first or second post) required immediately and 28th June for 6 months. Recognised for F.R.C.S.
Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NEWMARKET GENERAL HOSPITAL, Newmarket. Applications are invited for the post of HOUSE PHYSICIAN, vacant 29th July, 1955. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident and tenable for 6 months. Salary in accordance with national scale.
Applications, together with 3 recent testimonials, to Physician-Superintendent.

NEWMARKET GENERAL HOSPITAL, Newmarket. Applications are invited for the post of SENIOR HOUSE OFFICER (obstetrics, 14 Beds, and gynæcology, 10 Beds), with opportunity for gaining experience in general surgery, required on 8th July, 1955. Salary £745, less emoluments.
Applications, giving age, nationality, and qualifications, together with copies of 3 recent testimonials, to be addressed to the Physician-Superintendent.

NEWMARKET GENERAL HOSPITAL, Newmarket. Applications are invited for the post of HOUSE SURGEON vacant 9th July, 1955. Duties include surgical house charge of general surgical, E.N.T., and eye cases. Post resident and available for 6 months, recognised for pre-registration.
Applications, with copies of 3 testimonials, to the Physician-Superintendent.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.
ANÆSTHETIC REGISTRAR (resident), Oldchurch Hospital, Romford, Essex. Some duties in Neurosurgical Theatre. Recognised for D.A. and F.F.A.R.C.S.
REGISTRAR in General and Orthopædic Surgery (resident), Tilbury and Riverside General Hospital, Tilbury, Essex. Recognised for F.R.C.S.
Appointments subject to review after 1 year.
Separate applications in triplicate, with 3 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 9th July, 1955.

NORWICH. NORFOLK AND NORWICH HOSPITAL. Applications are invited for the following appointments vacant 1st August, 1955. All are pre-registration posts and the salaries in each case are at the rate of £425, £475, or £525 p.a. according to experience, less £125 p.a. for residential emoluments :—
(1) **Norfolk and Norwich Hospital, Norwich**
HOUSE PHYSICIAN (Male or Female). Duties entirely general medical.
HOUSE SURGEON (Male or Female). Post recognised for Final F.R.C.S. examination requirements. Duties entirely general surgical.
JUNIOR CASUALTY OFFICER (2 Casualty Officers employed in Department).
(2) **Jenny Lind Hospital for Children, Norwich**
RESIDENT MEDICAL OFFICER (Male or Female).
HOUSE SURGEON (Male or Female).
At the Jenny Lind Hospital which forms the entire Pædiatric Department of the United Norwich Hospitals. The duties are under the direct supervision of the Consultant staff of the Norfolk and Norwich Hospital.
(3) **West Norwich and Norwich Isolation Hospitals**
HOUSE PHYSICIAN (Male or Female). Duties include acute medical, geriatric and infectious diseases. The beds at these units are under the control of the Consultant Physicians at the Norfolk and Norwich Hospital, and the successful candidate will be required to undertake general medical duties under their supervision.
(4) **West Norwich Hospital, Norwich**
HOUSE SURGEON (Male or Female). Post recognised for Final F.R.C.S. examination requirements. Duties general surgical and including burns and plastic work. The beds at this Hospital are under the control of the Consultant staff of the Norfolk and Norwich Hospital.
(5) **Norfolk and Norwich Hospital, Norwich.** Applications are also invited for the following House Officer appointments vacant 1st August, 1955 :—
SENIOR CASUALTY OFFICER AND HOUSE SURGEON to the Septic Block, Male or Female (2 Casualty Officers employed). Recognised for Final F.R.C.S. examination requirements. Salary £745 p.a., less £150 for full residential emoluments.
ORTHOPÆDIC HOUSE SURGEON (House Officer or Senior House Officer status). Salary £745 p.a. if Senior House Officer, less £150 for full residential emoluments.
Applications for the above posts stating age, qualifications and experience (Membership of a Medical Defence Society is a condition of appointment), with names of 2 referees, to be sent to Group Secretary, No. 6 Group Hospital Management Committee, St. Stephen's-road, Norwich.

NORWICH. UNITED NORWICH HOSPITALS. Norfolk and Norwich Hospital, Norwich. Applications are invited for the appointment of SENIOR HOUSE OFFICER ANÆSTHETIST, salary £745 p.a. If residential accommodation required, deduction of £150 p.a. Recognised for D.A. and F.F.A.R.C.S. Membership of a Medical Defence Society is a condition of appointment.
Applications stating age, qualifications and experience, with names for reference, to Secretary (Group 6), Hospital Management Committee, St. Stephen's-road, Norwich.

ORPINGTON HOSPITAL, Orpington, Kent. Resident ANÆSTHETIST (Senior House Officer) required for above 813-Bedded General Hospital. Post recognised for D.A.
Apply Physician-Superintendent.

OXFORD REGIONAL HOSPITAL BOARD. Senior REGISTRAR in General Surgery to the hospitals of the Reading area for 1 year in the first instance, eligible for extension to 4 years subject to satisfactory annual review. Single accommodation in hospital is available if required. The hospitals may be visited by arrangement with the Group Secretary, 3, Craven-road, Reading.
Applications on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, must reach him by 16th July, 1955.

PLYMOUTH. SCOTT ISOLATION HOSPITAL. House PHYSICIAN (resident, Male) post vacancy 1st August, 1955. Recognised pre-registration post which offers excellent experience.
Applications should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.
SENIOR HOUSE OFFICER in Surgery, Greenbank Road Section, vacant 1st August, 1955. Recognised for the F.R.C.S.
SENIOR HOUSE OFFICER in Surgery, Devonport Section, vacant 21st August, 1955. Recognised for the F.R.C.S.
SENIOR HOUSE OFFICER to Casualty and Traumatic Department, Freedom Fields Section, vacant 3rd August, 1955.
HOUSE SURGEON (pre-registration post), Freedom Fields Section, vacant 1st July, 1955. Recognised for the F.R.C.S.
Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—
ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP.

Alexandra Maternity Home, Devonport

HOUSE OFFICER in Obstetrics, vacant immediately.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to the undersigned as soon as possible.

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PAISLEY AND DISTRICT HOSPITALS MATERNITY UNIT. Locum JUNIOR HOSPITAL MEDICAL OFFICER required for above Unit.

Applications to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

PAISLEY AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. The following posts are available, duties commencing 1st August, 1955 :—

(1) JUNIOR HOSPITAL MEDICAL OFFICERS for :—
- (*a*) Orthopædic Unit and
- (*b*) Casualty Department

for Royal Alexandra Infirmary.

(2) HOUSE OFFICERS for :—
- (*a*) Paisley Maternity Unit and
- (*b*) Paisley I.D. Hospital.

Applications to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. LLWYNYPIA HOSPITAL, LLWYNYPIA, RHONDDA. (50 acute medical beds ; geriatric beds ; serving area population of 112,000.) SENIOR HOUSE OFFICER (medical), to commence 1st August, 1955. Person appointed will have part responsibility for the Group Infectious Diseases Hospital.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Royal Portsmouth Hospital

HOUSE OFFICER for pædiatric and medical beds—total 30. Pre-registration post. Vacant 16th July, 1955.

HOUSE SURGEON (70 surgical beds), vacant 1st August. Pre-registration post.

St. Mary's Hospital (74 medical and 107 surgical beds)

HOUSE PHYSICIAN, vacant 31st July. Pre-registration post.

HOUSE PHYSICIAN, vacant 5th August. Pre-registration post.

HOUSE SURGEON, vacant 25th July. Pre-registration post.

HOUSE SURGEON, vacant 26th July. Pre-registration post.

HOUSE SURGEON, vacant 31st July. Pre-registration post.

Queen Alexandra Hospital (126 surgical beds)

HOUSE SURGEON, vacant 2nd August. Pre-registration post.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.

35, Grove-road South, Southsea.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Saint Mary's Hospital

SENIOR HOUSE OFFICER for Pædiatric Department (53 Beds), including over-sight of neonatal problems in a large Maternity Department. Vacant 21st July, 1955.

Queen Alexandra Hospital

SENIOR HOUSE OFFICER required for the Gynæcological Department of the Group for duties at the above Hospital. 40 gynæcological beds. Recognised for M.R.C.O.G. Vacant now.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.

35, Grove-road South, Southsea.

READING. ROYAL BERKSHIRE HOSPITAL. (401 Beds.) Applications are invited from registered medical practitioners only for the resident post of JUNIOR HOUSE SURGEON (gynæcology), vacant immediately and tenable for 6 months.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to the Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (401 Beds.) Applications are invited from registered medical practitioners for the appointment of SENIOR RESIDENT ANÆSTHETIST, vacant 20th July, for period of 1 year. F.F.A.R.C.S. recognised. Salary £745 p.a., less £125 p.a. board-residence.

Write, stating age, qualifications with dates, nationality and present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN posts available at Birch Hill Hospital mid-July and early August. Pre-registration candidates eligible.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medicine), resident, required at Birch Hill Hospital mid-July.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (resident) required from 1st August, 1955, for duties in the Casualty and Admissions Department. This is a large general hospital with specialised departments dealing with all types of acute medical and surgical cases. The post affords good opportunity for gaining tuition and experience.

Applications should be addressed to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) 3 HOUSE PHYSICIANS (resident) required from 25th July, 23rd and 31st August, 1955. Open to either pre-registration applicants or to fully qualified practitioners. Posts tenable for 6 months.

Apply to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited from medical practitioners of either sex for the appointment of RESIDENT HOUSE OFFICER to the Obstetric and Gynæcological Department. The Hospital has 70 maternity beds, a gynæcological ward of 25 Beds and a premature Baby Unit of 8 Cots. Post vacant 18th July, 1955, and is recognised for the D.Obst.R.C.O.G.

Applications, &c., to be sent to the undersigned by 1st July, 1955. J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Locum GERIATRIC REGISTRAR required immediately at the above Hospital for a period of approximately 2 months. The Unit consists of 120 Beds and an outpatients clinic under the general direction of a Consultant. A wide range of facilities are available at the Hospital for investigation, treatment and rehabilitation of acute and chronic sick.

Apply to the Secretary as soon as possible.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Locum SENIOR HOUSE OFFICER required for the Geriatric and Psychiatric Units at the above Hospital. Post vacant 1st July. A wide range of facilities are available at the Hospital for the investigation, treatment and rehabilitation of acute and chronic cases.

Applications, &c., to the undersigned immediately.

J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric and Psychiatric Units at the above Hospital. A wide range of facilities are available at the Hospital for the investigation, treatment and rehabilitation of acute and chronic cases. Furnished or unfurnished accommodation available. Post vacant 1st July, 1955.

Applications stating age, &c., to be sent to the undersigned by 6th July, 1955. J. C. FIELD, Secretary.

RUGBY. HOSPITAL OF ST. CROSS. (156 Beds.) CASUALTY AND ACCIDENT OFFICER (Junior Hospital Medical Officer status), resident, married quarters available, recognised F.R.C.S. Duties include orthopædics.

Applications to Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

RUGBY. HOSPITAL OF ST. CROSS, AND ST. MARY'S HOSPITAL, HARBOROUGH MAGNA. HOUSE OFFICER (gynæcology and obstetrics). Obstetrics 40 Beds. Gynæcology 12 Beds. Not pre-registration. Vacant mid-July. Resident.

Applications to Hospital Secretary, Hospital of St. Cross, Rugby.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts, which are approved for pre-registration purposes :—

Stockport Infirmary (162 Beds)

HOUSE OFFICER (general surgery and ophthalmology). Recognised for the F.R.C.S. and D.O.M.S. Vacant 15th July, 1955.

HOUSE OFFICER (general surgery and E.N.T.). Recognised for the F.R.C.S. and D.L.O. Vacant 1st August, 1955.

HOUSE OFFICER (general surgery and gynæcology). Recognised for the F.R.C.S. Vacant 19th July, 1955.

Stepping Hill Hospital, Stockport (496 Beds)

HOUSE OFFICER (medicine), vacant 16th July, 1955.

HOUSE OFFICER (medicine), vacant 1st August, 1955.

HOUSE OFFICER (obstetrics), vacant 14th August, 1955.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Group Secretary, 59B, Shaw-heath, Stockport, Cheshire, to be received not later than Wednesday, 6th July, 1955. The Appointments Sub-Committee will meet at 5 P.M. on Wednesday, 6th July, at the Board Room at Stockport Infirmary, when all applicants should attend for interview.

STOKE-ON-TRENT (near). HAYWOOD HOSPITAL. (96 Beds.) RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer) required. Hospital staffed by Group Consultants.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT (near). HAYWOOD HOSPITAL. (96 Beds.) RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer) required. Hospital staffed by Group Consultants.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (E.N.T.) required, vacant now. Recognised F.R.C.S.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (ophthalmology) required. Recognised F.R.C.S. and D.O.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) HOUSE OFFICER (general surgery) required, vacant July. Recognised F.R.C.S. and pre-registration.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER in Orthopædics. Recognised F.R.C.S.

Applications (2 references) to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SWANSEA. MOUNT PLEASANT HOSPITAL. Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics for the Maternity Unit of 42 Beds at the above Hospital, vacancy mid-July.

Applications, stating age, qualifications and experience, should be addressed to the Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (407 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the appointment of ANÆSTHETIST (Senior House Officer grade) at the above Hospital, vacancy mid-July. The Hospital is recognised under the D.A. and F.F.A.R.C.S. regulations.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (407 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Surgical Unit of the above Hospital, vacancy early August. The Hospital is recognised for the F.R.C.S. (Eng.) examinations.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of MEDICAL REGISTRAR at above Hospital with effect from 15th September, 1955.

Further details and application forms obtainable from, and should be returned to, Group Secretary, Odstock Hospital, Salisbury, within 10 days of the appearance of this advertisement.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum RESIDENT or NON-RESIDENT CASUALTY OFFICER (Senior House Officer). Post vacant now.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury, Wilts.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER to the E.N.T. Department. Post is recognised for D.L.O. and F.R.C.S. and is vacant September, 1955.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury, Wilts.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Medicine based at Stobhill Hospital, Glasgow.

SENIOR REGISTRAR in Surgery based at the Dumfries and Galloway Royal Infirmary, Dumfries.

SENIOR REGISTRAR in Anæsthetics based at Law Hospital, Carluke.

REGISTRAR in Psychiatry based at Stobhill Hospital, Glasgow.

REGISTRAR in Obstetrics and Gynæcology based at the Royal Maternity Hospital and the Royal Samaritan Hospital, Glasgow.

REGISTRAR in Psychiatry based at the Crichton Royal Mental Hospital, Dumfries.

REGISTRAR in Anæsthetics based at the Western Infirmary, Glasgow.

REGISTRAR in Psychiatry for duties primarily in Child Psychiatry based at the Crichton Royal Mental Hospital, Dumfries.

REGISTRAR in E.N.T. Surgery based at the Royal Infirmary, Glasgow.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 16th July, 1955. These appointments are subject to the National Health Service (Scotland) superannuation regulations.

SHEFFIELD. MIDDLEWOOD HOSPITAL. (2089 Beds. Recognised for training for D.P.M.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (psychiatry) required. Appointment for 1 year in first instance.

Apply Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th July, 1955, giving age, nationality, qualifications, present and past appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. City GENERAL HOSPITAL, SHEFFIELD. Whole-time NON-RESIDENT SENIOR MEDICAL REGISTRAR required. The Hospital has teaching affiliations with Sheffield University and most of the Consultant staff have the status of Clinical Teachers. There is a Professorial Medical Unit and a Regional Cardiological Department. Appointment for 1 year in first instance reviewable annually. It has been agreed between the Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that, subject to satisfactory work and progress, the tenure of the appointment will be divided between the City General Hospital and 1 of the Teaching Hospitals.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th July, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY HOSPITAL GROUP. HOUSE SURGEON for general surgical duties (pre-registration post), vacant immediately.

Applications with copy testimonials to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY, CHIL-DREN'S UNIT. SHREWSBURY HOSPITAL GROUP. SENIOR HOUSE OFFICER or HOUSE OFFICER (pædiatric), vacant immediately. The Unit consists of medical, surgical and fever beds.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COP-THORNE HOSPITAL. (500 Beds.) HOUSE PHYSICIAN, for Pre-registration Service, vacant 1st August, 1955.

Applications, with copy testimonials, to Group Secretary, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY HOSPITAL GROUP. Registrar in E.N.T. Surgery. Duties—E.N.T. Hospital, Shrewsbury (68 Beds), and Copthorne Hospital (168 Beds). Resident/non-resident. Considerable experience specialty desirable.

Application forms from Group Secretary, Royal Salop Infirmary, Shrewsbury, to be returned before 16th July, 1955. Candidates may visit hospitals.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with copies of 2 testimonials, to Hospital Secretary.

SOUTH SOMERSET CLINICAL AREA. The Board of GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of SENIOR REGISTRAR in Psychiatry. The appointment will be held for 1 year in the first instance, but may be renewed thereafter on an annual basis. The successful candidate will be appointed to work for the first year mainly at Tone Vale Hospital, near Taunton, which provides treatment in all types of psychiatric cases, including psychotic children, and all forms of modern treatment ; also attendance at outpatient psychiatric clinics and work in the Electroencephalographic Department. He will also be required to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time. A flat suitable for a married man or single quarters will be available in the Hospital.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 16th July, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for the post of Whole-time REGISTRAR in Geriatrics for duties within a group of hospitals. Candidates may visit the hospitals concerned if they so desire.

Forms of application obtainable from the undersigned, should be returned not later than 6th July, 1955.

FRANK JENNINGS, Group Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for the D.O. examination.) RESIDENT SENIOR HOUSE OFFICER required immediately.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (278 Beds) AND SOUTHAMPTON GENERAL HOSPITAL (471 Beds). SENIOR HOUSE OFFICER (E.N.T.) required in June. This post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work, including audiometry. The Group includes a diagnostic and distributing hearing-aid centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions ; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible, to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON, vacant 16th July. Post recognised for M.R.C.O.G.

Applications, &c., to reach the undersigned not later than 29th June, 1955. J. C. FIELD, Secretary.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Applications are invited from fully registered practitioners for the post of RESIDENT HOUSE PHYSICIAN (House Officer grade). Post vacant 1st August, 1955. Appointment primarily to Pædiatric Department, with duties in Cardiological and Skin Departments. Post recognised for D.C.H.

Applications, stating age, qualifications, and previous experience, with copies of recent testimonials, should reach the undersigned at the Hospital by 30th June, 1955.

J. C. FIELD, Secretary.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE PHYSICIAN (pre-registration post), vacant July. At end of term of service the successful applicant will be considered for appointment to a pre-registration post of House Surgeon if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON (pre-registration post), vacant July. At end of term of service the successful applicant will be considered for appointment to a pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

TAUNTON HOSPITAL MANAGEMENT COMMITTEE. TAUNTON AND SOMERSET HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER (Resident Surgical Officer). Post vacant from 13th July, 1955. Recognised for the F.R.C.S.

Applications, stating age, nationality and qualifications together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

TORQUAY. TORBAY HOSPITAL. (166 general beds.) RESIDENT HOUSE OFFICER (surgical) Male or Female, required immediately. Post recognised for F.R.C.S. and pre-registration purposes. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, nationality, and age, together with copy testimonials (quoting reference F. 955/58) to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited for positions of SENIOR HOUSE OFFICERS in the Thoracic Surgical and Orthopædic Departments, or Locum Tenens SENIOR HOUSE OFFICER (thoracic). Salary for Senior House Officers will be £745 p.a. For the Locum Tenens appointment payment will be at the rate of £14 10s. a week. In all cases a charge of £155 p.a. will be made for residential accommodation.

Address written applications, giving full personal particulars, details of experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary.

Victoria Chambers, Wood-street, Wakefield.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for 2 HOUSE SURGEONS (Male or Female), recognised for pre-registration. The posts will be vacant on 25th July, 1955, and 23rd August, 1955, respectively. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar, and 2 House Surgeons. The posts offer a comprehensive training in surgery.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,

Warrington and District Hospital Management Committee.

c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited from Males or Females for the post of RESIDENT HOUSE PHYSICIAN (pre-registration or Senior House Officer) at the above Hospital. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments, or Senior House Officer grade—£745 p.a., less £130 for residential emoluments.

Applications should be forwarded to—

H. L. BOOT, Group Secretary,

Warrington and District Hospital Management Committee.

c/o General Hospital, Warrington, Lancs.

WARWICK HOSPITAL, Lakin-road, Warwick. (264 Beds.) HOUSE PHYSICIAN. Post recognised pre-registration, resident, vacant 25th July.

Applications, with 2 testimonials, to be forwarded to Medical Superintendent.

WARWICK HOSPITAL, Lakin-road, Warwick. (284 Beds.) HOUSE SURGEON. Pre-registration or registered candidates may apply. Resident, vacant 25th July. Good experience in general surgery.

Applications, with 2 testimonials, to be forwarded to Medical Superintendent.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. CASUALTY AND ORTHOPÆDIC HOUSE SURGEON (pre-registration). Intermediate or Senior post depending on experience. Required 1st July for Orthopædic Unit (30 Beds). The Orthopædic Service is in charge of a Consultant and Registrar closely associated with a Postgraduate Teaching Hospital.

Applications, with copies of 2 testimonials, to the Administrator.

WATFORD, HERTFORDSHIRE. THE PEACE MEMORIAL HOSPITAL. (189 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre-registration post), vacant beginning of July. Salary according to National Health Service scale.

Applications, with copies of recent testimonials, to—

CYRIL HOPKINSON, Administrator.

WATFORD, HERTFORDSHIRE. THE PEACE MEMORIAL HOSPITAL. (189 Beds.) Applications are invited for the post of HOUSE SURGEON (pre-registration post). Salary according to National Health Service scale.

Applications, with copies of recent testimonials, to—

CYRIL HOPKINSON, Administrator.

WEAVERHAM, CHESHIRE. HEFFERSTON GRANGE SANATORIUM. (162 Beds.) Resident Locum SENIOR HOUSE OFFICER required immediately. Ministry of Health terms and conditions of service.

Applications to the Secretary of the Management Committee at the above address as soon as possible.

WELSH REGIONAL HOSPITAL BOARD.

SURGICAL REGISTRAR (orthopædics) to serve Cardiff Hospital Management Committee, based at Prince of Wales Hospital, Rhydlafar, near Cardiff (200–300 Beds). Hospital is Regional Orthopædic Centre for South Wales Area. Married accommodation available.

REGISTRAR (general surgery) based at Caerphilly District Miners' Hospital, Caerphilly, Glamorgan. Married or single quarters may be available.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR in Ophthalmology to serve Glantawe Hospital Management Committee. Based at Llanelly Hospital (24 ophthalmic beds), expected to serve other hospitals in Group. Non-resident.

REGISTRAR in General Surgery to serve Mid Glamorgan Hospital Management Committee. Successful candidate will be based at Bridgend General Hospital (400 Beds) and may also be expected to serve other hospitals within the Group. Hospital is recognised for F.R.C.S. Resident/non-resident.

REGISTRAR (anæsthetics) Mid Glamorgan Hospital Management Committee. Successful candidate will be based at Neath General Hospital (412 Beds). Hospital recognised for D.A. Resident/non-resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited from medical practitioners (qualified or pre-registration—Male or Female), for 2 HOUSE OBSTETRICAL OFFICER posts at the Maternity Hospital, St. Leonard's, Dunfermline (56 Beds). Resident. The persons to be appointed will be required to take up duty on 1st September and 1st October respectively. Salary and conditions of service in accordance with National Health Service Whitley Council agreements. The Hospital is recognised by the Royal College of Obstetricians and Gynæcologists as a training school.

Apply to the Medical Superintendent.

WOLVERHAMPTON GROUP.

The Royal Hospital (an Associated Hospital of the University of Birmingham Medical School)

HOUSE OFFICER (casualty), vacant now.

HOUSE OFFICER (E.N.T. Department), vacant 17th July.

SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

*3 HOUSE OFFICERS (general surgery), vacant July.

Women's Branch

*HOUSE OFFICER (gynæcological and obstetric), vacant 24th July. Appointment recognised for M.R.C.O.G.

*Approved for Pre-registration Service.

Apply, with copies of testimonials, to Secretary, The Royal Hospital, Wolverhampton.

WOODFORD BRIDGE, WOODFORD GREEN, ESSEX. CLAYBURY HOSPITAL (for nervous and mental disorders). Applications are invited for the post of Full-time SENIOR HOUSE OFFICER (resident or non-resident). Board-residence for an unmarried applicant, for which a charge of £150 p.a. will be made, is available. The Hospital has over 2000 Beds and an admission-rate of over 1200 a year. All forms of treatment are undertaken and outpatient clinics at general hospitals are run by the Hospital Staff. Clinical conferences and seminars for the D.P.M. candidates are held weekly and facilities will be offered to attend lectures in London (1 hours journey). Previous general but not psychiatric experience necessary.

Applications, with full particulars, and the names and addresses of 2 referees, to be sent to Physician-Superintendent not later than 14 days after the appearance of this advertisement.

WORTHING HOSPITAL, Lyndhurst-road, Worthing. (210 Beds—General.) WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Vacancy as HOUSE SURGEON will occur early in July, 1955.

Applications from either registered medical practitioners, or pre-registration candidates, stating age, qualifications, experience, nationality and enclosing copies of 2 recent testimonials, to be forwarded to the Hospital Secretary as soon as possible.

A. V. OAKTON, Group Secretary.

WREXHAM (near). TREVALYN MANOR MATERNITY HOSPITAL, ROSSETT. (47 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence 1st July, 1955. The Hospital is recognised by Central Midwives Board as a Part II Midwifery Training School and deals with normal and abnormal midwifery.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WESTON-SUPER-MARE GENERAL HOSPITAL. (107 Beds.) Applications are invited from registered medical practitioners for the pre-registration appointment (resident) vacant 1st September, 1955, of HOUSE PHYSICIAN.

Applications, stating age, qualifications, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WESTON-SUPER-MARE GENERAL HOSPITAL. (107 Beds.) Applications are invited from registered medical practitioners for the pre-registration appointment (resident) vacant 1st August, 1955, of HOUSE SURGEON.

Applications, stating age, qualifications, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE OFFICER (anæsthetics). Post vacant 7th September. The Hospital is recognised for the F.F.A.R.C.S. and D.A.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 9th August.

Applications, with copies of 2 testimonials, to the Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Clinical ASSISTANT (ophthalmology) required for Wednesday and Friday afternoons during the 13 weeks commencing 17th July and ending 15th October. Salary at the rate of £175 p.a. per half-day.

Apply to Hospital Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General Surgery required, Male or Female, for post vacant 21st July. Recognised for F.R.C.S. Preference given to persons seeking pre-registration post. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, and copies of recent testimonials, to Hospital Secretary, by 30th June.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN (pædiatrics) required, Male or Female, for post vacant 3rd August. Hospital recognised for D.C.H. Preference given to persons seeking pre-registration post. Successful candidate will be resident at Old Windsor Unit of Hospital. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, and experience, with copies of 3 testimonials, to Hospital Secretary by 3rd July.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks (220 Beds)

ORTHOPÆDIC HOUSE SURGEON (first, second, or third post). Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S.

Apply to Group Secretary.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Broadgate (Mental) Hospital, Beverley, Yorkshire (650 Beds)

JUNIOR HOSPITAL MEDICAL OFFICER required.

Facilities for study. A flatlet is available in the Hospital.

Detailed applications to Group Secretary, Westwood Hospital, Beverley.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for 4 whole-time posts as JUNIOR TUTOR/SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, which will be filled by appointments made jointly by the Queen's University and the Authority. In the first instance the appointments will be for the year commencing 1st October, 1955, and the terms and conditions will be in accordance with the Authority's application of the Spens Report to Northern Ireland and the Charter, Statutes and Regulations of the University.

Applications should be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and which must be returned so as to be received not later than 9th July, 1955.

CANADA. OTTAWA GENERAL HOSPITAL, Ottawa, ONTARIO. (600 Bed general hospital affiliated with the Medical School of the University of Ottawa.) Residencies vacant.

Pediatrics : 100 Beds Department, outpatient clinic, 70 cots nursery. 1 RESIDENT vacancy.

Psychiatry : 30 Beds department for active treatment, adult and child guidance clinics. 2 RESIDENT vacancies.

Pathology : large department, high rate of necropsies. 1 SENIOR INTERN vacancy.

These 3 departments are approved for 2 years postgraduate training by the Royal College of Physicians and Surgeons of Canada, for Specialist certification. Remuneration : Residents $1800. Senior Interns $1200 p.a., plus room, board, and uniform.

Apply to Mother Superior.

MICHIGAN, U.S.A. OAKWOOD HOSPITAL, Dearborn, MICHIGAN. Applications are invited for 1 or 2 year General Practice RESIDENCY in new 230-Bed general hospital 10 miles from Detroit. Excellent facilities. Hospital approved for exchange-visitor programme. Salary begins at $275 per month.

Apply : Director.

Public Appointments

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment as ASSISTANT DIVISIONAL MEDICAL OFFICERS in Administrative County Area adjacent to Blackburn and at Chadderton, Fleetwood, Lytham St. Annes and Leigh. Possession of D.P.H. desirable. Salary £975–£1375 p.a. Travelling and subsistence allowances where applicable.

Application forms and further particulars from County Medical Officer, Serial 193, East Cliff County Offices, Preston.

LONDON COUNTY COUNCIL. Applications are invited from registered medical practitioners for appointment as Whole-time MEDICAL OFFICER in the Public Health Department. Inclusive salary £975 a year rising by annual increments of £50 to £1375 a year. Commencing salary dependent on local government service. No emoluments. Duties are primarily connected with child health. It will be an advantage if the candidate is experienced in maternity and child welfare work and the School Health Service and has the Diploma in Public Health.

Application forms from the Medical Officer of Health (PH/D1), The County Hall, Westminster Bridge, S.E.1, returnable by 11th July. (935.)

CIVILIAN SPECIALISTS FOR THE ARMY. Immediate applications are invited from Men and Women for appointment as CIVILIAN SPECIALISTS in Anæsthetics for service with the R.A.M.C. at home and overseas. Full particulars and application forms can be obtained from the Under-Secretary of State, The War Office (AMD.2), Lansdowne House, Berkeley-square, London, W.1 (Tel. GROsvenor 8040, Ext. 548).

Salary is at following rates :

Home stations £1300 or £1850 p.a.

Overseas stations £1800 or £2200 p.a.

according to experience and qualifications.

At any overseas station where the cost-of-living is officially determined as being higher than that in the United Kingdom, a tax-free Foreign Service allowance on account of the extra cost-of-living may be given. Tropical outfit allowance up to £30 except for stations in Western Europe. Annual leave of 36 days. Engagements will be for 18 months all to be spent overseas, with possible extension of a further 6 months. Superannuation payments under the National Health Service can be continued if desired, with the War Department paying employer's contribution, and pension rights thus retained. Service with the War Department counts for incremental purposes on re-employment under the National Health Service. Free accommodation, and in some areas free rations, is provided on single basis, but official accommodation not available for families of married individuals. Rent of private accommodation and payment of passages for families are the responsibility of the employee.

LINCOLN. CITY AND COUNTY OF THE CITY OF LINCOLN. Appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. Applications are invited for this appointment from persons holding the D.P.H. or its equivalent, with previous experience in the Public Health, School Health and Maternity and Child Welfare Services. The post is superannuable. The salary scale is £1150–£50–£1350 p.a. and the commencing salary will be according to the experience of the successful candidate. Car mileage allowance. The Council recognise the post as one for priority housing accommodation.

Application forms and particulars of conditions of service may be obtained from the Medical Officer of Health, City Health Department, Beaumont Fee, Lincoln, by whom completed applications should be received not later than 17th July, 1955

J. HARPER SMITH, Town Clerk.

Town Clerk's Office, Lincoln, 2nd June, 1955.

NAVY, ARMY, AND AIR FORCE INSTITUTES. Applications are invited from general practitioners in the undernoted towns for the appointment, in a part-time capacity, as MEDICAL OFFICERS to this Corporation. Successful applicants would be required to examine and report on the condition of employees of the Corporation who may be referred to them from time to time. Fees for this work will be paid on a scale agreed with the British Medical Association.

Applications, giving full details of qualifications and experience, should be sent to Principal Medical Officer, Navy, Army, and Air Force Institutes, Kennington-lane, London, S.E.11. Applicants should not be more than 60 years of age.

The towns for which applications are invited are :—

Birkenhead	Warrington	Shrewsbury
Stafford	Warwick	Hereford
Wrexham	Bangor (N. Wales)	Cardiff

ROTHERHAM. COUNTY BOROUGH OF ROTHERHAM. MEDICAL OFFICER OF HEALTH AND PRINCIPAL SCHOOL MEDICAL OFFICER. Applications are invited for this whole-time appointment from suitably qualified registered medical practitioners. The conditions of service will be as prescribed by Committee "C" of the Medical Whitley Council. Car allowance on "casual users" scale. Salary £1750–£50–£2000 p.a. subject to review on publication of award of Industrial Court.

Details of the appointment may be obtained from the undersigned, to whom applications endorsed "Medical Officer of Health" stating age, qualifications and experience, together with the names and addresses of 3 persons to whom reference may be made, should be delivered not later than 1st July, 1955. Canvassing will disqualify.

JOHN S. WALL, Town Clerk.

Municipal Offices, Rotherham, 3rd June, 1955.

SHEFFIELD. CITY OF SHEFFIELD EDUCATION COMMITTEE. Applications are invited from duly qualified medical practitioners (Men and Women) for appointment as SCHOOL MEDICAL OFFICER. Special consideration will be given to the applications of candidates who have had experience in the treatment of children. Possession of the D.P.H. or D.C.H. qualification will be an advantage. Salary scale to be in accordance with the Whitley Councils for the Health Services (Great Britain) Medical Council, Committee "C." Superannuable post. Subject to satisfactory medical examination.

Application forms and particulars of the appointment may be obtained from the Director of Education, Education Office, P.O. Box 67, Leopold-street, Sheffield, 1, and should be returned not later than 9th July, 1955.

STANLEY MOFFETT, Director of Education.

SURREY COUNTY COUNCIL. Guildford and Godalming BOROUGH COUNCILS. Mixed appointment of COUNTY DIVISIONAL AND BOROUGH MEDICAL OFFICERS OF HEALTH. Applications invited from fully qualified registered medical practitioners. Salary £1765 9s. 1d. p.a., rising by annual increments to £2143 12s. 9d. Commencing salary according to experience. Appointment subject to medical examination and to Local Government Superannuation Acts.

Applications, stating age, qualifications, and experience, with names of 3 referees, to County Clerk, County Hall, Kingston-on-Thames, by 27th July.

W. W. RUFF, Clerk of Surrey County Council.
H. C. WELLER, Town Clerk of Guildford.
R. C. HODGINS, Town Clerk of Godalming.

ROXBURGH AND SELKIRK COUNTIES. Applications are invited by the County Councils of Roxburgh and Selkirk for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH for these 2 counties jointly. Applicants must be registered medical practitioners (Male) holding a Diploma in Public Health, or equivalent registered qualification, and have had clinical and administrative experience in public health and school health work. The salary and conditions of service will be in accordance with the national arrangement approved by Committee "C" of the Medical Council of the Whitley Councils for Health Services (Great Britain), the present salary scale being £975, rising by annual increments of £50 to £1375. Modern 3-apartment house available if required. The appointment of an applicant will be subject to satisfactory medical examination.

Applications, stating age, full particulars of qualifications, experience, &c., and accompanied by the names and addresses of 3 referees, should be lodged with the undersigned not later than 2nd July, 1955. Canvassing, directly or indirectly, will disqualify.

JAMES R. HUME, County Clerk of Roxburghshire.
County Offices, Newtown St. Boswells, 14th June, 1955.

SMETHWICK, COUNTY BOROUGH OF SMETHWICK. Appointment of MEDICAL OFFICER OF HEALTH AND PRINCIPAL SCHOOL MEDICAL OFFICER. Applications for this post are invited from medical practitioners who hold the qualifications prescribed by the Local Government Act, 1933, and the regulations made thereunder. The Council have adopted the salary scales and conditions of service agreed by Committee "C" of the Medical Whitley Council and the salary attached to the post is £1937 10s. p.a., rising by 5 annual increments of £51 10s. to a maximum of £2195 p.a., plus a motor-car allowance of £165 p.a. The successful applicant will also be responsible for the general direction and supervision of the Council's Welfare Services and the Welfare Section of the Civil Defence Corps. The post is superannuable and the person appointed will not be permitted to engage in private practice as a medical practitioner. The appointment will be subject to termination by 3 months notice in writing.

Applications, giving full particulars of age, qualifications, present and past appointments, general experience, and including the names and addresses of 3 referees, must reach the undersigned not later than 12th July, 1955.

E. L. TWYCROSS, Town Clerk.
Council House, Smethwick, 40.

COMMONWEALTH OF AUSTRALIA. Public Service of PAPUA AND NEW GUINEA. Vacancy.

SPECIALIST MEDICAL OFFICER (Leprology). £2648 (Australian) p.a.

Qualifications.—Graduate in medicine with Diploma of Tropical Medicine and Hygiene; experienced in handling lepers and wide experience in leprosy under tropical conditions.

Duties.—Advise on all matters relating to prevention, diagnosis and treatment of leprosy and conducting of special institutions; conduct surveys, act as consultant and train staff.

Location.—Port Moresby.

Salary.—The rate quoted is actual and includes Territorial allowance. Married officers receive an additional £100 p.a.

Eligibility.—Adult male British subjects under 45 years.

Appointment.—Permanent, subject to satisfactory probationary period.

Accommodation.—Married accommodation is available.

Separation allowance.—Payable at discretion of Territory Administration and designed to compensate for added expense of married appointees obliged to maintain family outside Territory.

Leave.—3 months after 21 months in Territory.

Taxation.—Income derived by residents of Territory from sources within Territory is not at present taxable under Commonwealth legislation.

Further information.—Information Handbooks on the Public Service of the Territory are available from The Public Service Board Representative, Australia House, Strand, London, W.C.2. Other inquiries should be addressed to the Department of Territories, Canberra, A.C.T., Australia.

Applications should be submitted on the prescribed form, copies of which are available from either of the addresses mentioned in the preceding paragraph. Applications close with the Department of Territories, Canberra, A.C.T., on 31st August, 1955.

SASKATCHEWAN DEPARTMENT OF PUBLIC HEALTH

REGIONAL MEDICAL HEALTH OFFICER required.

Salary range.—$7524–$8688 p.a. Salary recognition is given to those possessing Certification as a Specialist in Public Health from the Royal College of Physicians and Surgeons (Canada).

Requirements.—Applicants should be under 45 years of age; should have had some medical and administrative experience; should possess a registrable qualification in medicine for the Province of Saskatchewan, and a Diploma from a recognised School of Public Health.

Duties.—This is a professional medical and administrative post in an area with a population of approximately 50,000. The holder will be required to develop regional preventative health services and a general public health programme.

Benefits.—3 weeks annual vacation with pay; 3 weeks sick leave, accumulative; suitable superannuation scheme.

Application forms and details concerning duties and responsibilities may be obtained from the Personnel Officer, Department of Public Health, Provincial Health Building, Regina, Sask., Canada.

PRISON COMMISSIONERS require an **Anæsthetist** at H.M. Prison, Wormwood Scrubs, for 2 sessions of 3½ hours per week. Fees payable at the National Health Service rate of 5 guineas per session. Applicants should hold a specialist qualification in anæsthetics.

Letters of application should be addressed to the Establishment Officer, Prison Commission, Horseferry House, Dean Ryle-street, S.W.1, not later than 14th July, 1955.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

BRYMBO, near WREXHAM, DENBIGHSHIRE. Applications are invited for VACANCY (semi-urban) caused by resignations (2 practices combined). Lists at present total approximately 2023. Residence and surgery available. Applications on Form E.C.16A to the undermentioned before 4th July, 1955. TUDOR WILLIAMS, F.C.I.I.,
Clerk of the Denbighshire and Flintshire Executive Council.
11, Grosvenor-road, Wrexham.

LLANFAIRTALHAIARN, near ABERGELE, DENBIGHSHIRE. Applications are invited for VACANCY (rural) caused by resignation. Knowledge of Welsh desirable. List at present approximately 1641. Residence and surgery available. Applications on Form E.C.16A to the undermentioned before 4th July, 1955. TUDOR WILLIAMS, F.C.I.I.,
Clerk of the Denbighshire and Flintshire Executive Council.
11, Grosvenor-road, Wrexham.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Oil Company operating in Far East requires services of Medical Specialist. Contract 3 years. Well-equipped hospitals with plenty of scope in tropical diseases and tuberculosis. Good housing and local leave. Age 30–35, salary £2500–£3000 according to age and experience, plus bonus at end of service.—Please write to BOX ZR.130, DEACON'S ADVERTISING, 36, Leadenhall-street, London, E.C.3.

Graduates of proven ability in their present fields, and who would be interested to consider a career in Electronics, are invited to discuss the careers that would be open to them with Decca Radar Limited. The Company is expanding rapidly both in size and scope of interests, and the opportunity is extended to first-class men to train at a salary dictated to some extent by their standing in their present field for command positions in the Research Laboratories of the Company. A Pension Scheme is in operation. British nationality is essential.—Please write, giving full personal details, to DECCA RADAR LTD., 2, Tolworth-rise, Surbiton, Surrey, quoting reference RLA 104.

Medical Journalism.—The "Lancet" has a vacancy on its editorial staff (full-time). Potential applicants, who must be medically qualified, are invited to write to THE EDITOR, 7, Adam-street, Adelphi, London, W.C.2, marking letter "Personal."

Redhill, Surrey. Substantially built residence in town centre for professional purposes. 10 rooms, bathroom, large garden, main services. Leasehold, 46 years unexpired. Sale privately now or auction 26th July.—Particulars: IBBETT, MOSELY, CARD & CO. Reigate (5441/2).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

Typewriting and Duplicating. First-class work at moderate prices by experienced medical typists.—SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM. 5329/0504).

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Hypnotism. Will all Doctors interested in this subject for Medical purposes please write to the Secretary, British Society of Medical Hypnotists, 126, Harley-street, W.1.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Professional, technical and personal typewriting. Duplicating, circularising, &c., efficiently and speedily executed.—"MOWBRAY," 146, Bishopsgate, E.C.2 (BIS. 2545. BAR. 7665).

Austin. The New Show Model A.30, A.40, A.50 and A.90. Limited number of orders now acceptable from proven essential users for delivery ahead.—Demonstrations, easy terms, brochures, application forms on request, from H. A. SAUNDERS LIMITED, Austin House, 140–144, Golders Green-road, Golders Green, London, N.W.11.

Exchange.—French Doctor wishes 15-year-old son to visit English medical family, Catholic, if possible, country or seaside, near London, from 16th July to 20th August. Would receive English boy for these weeks, at country home 20 kilometres from Aix en Provence, to share French lessons with 12-year-old son.—Address, No. 144, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Daughter of French Doctor, student, 21 years, speaks English, seeks au pair post this summer. Would look after children.—Write Dr. CARAILLO, 169, Boulevard Haussman, Paris, (8e), France.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, June 25, 1955.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

A new preparation

Quotane Ointment

Amino-Alkoxyisoquinolines.

Here is a new topical anaesthetic, chemically unrelated to the 'caine' group, with a remarkably low index of sensitization. When the patient's symptoms of itching, burning, and pain are hindering progress, when they are causing sleeplessness, or when scratching is leading to secondary infection of the lesions, this highly effective antipruritic may often provide a valuable support to treatment.

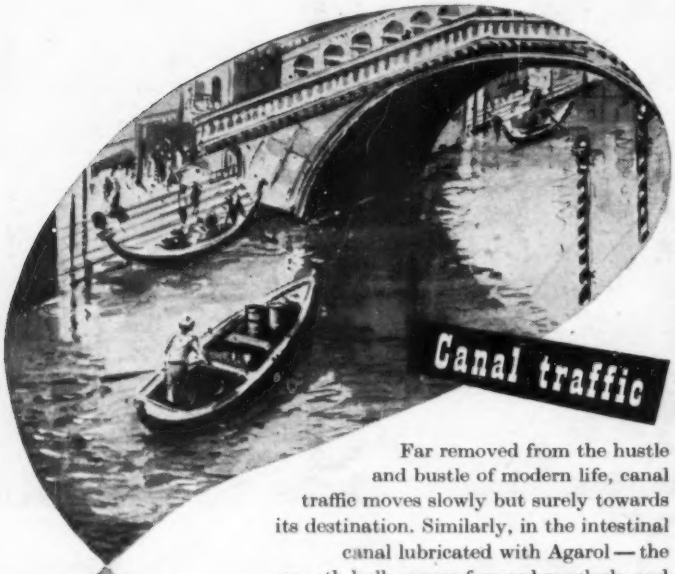
In 1-oz. (28g.) tubes

SMITH KLINE & FRENCH INTERNATIONAL CO.

represented by Menley & James, Limited, Coldharbour Lane, London, S.E.5

Tel: BRIxton 7851

'Quotane' is a registered trade mark QOP74*



Far removed from the hustle and bustle of modern life, canal traffic moves slowly but surely towards its destination. Similarly, in the intestinal canal lubricated with Agarol — the smooth bulk moves forward regularly and without strain; the faecal mass is easily evacuated at the end of the journey. The constituents of Agarol establish it as a mild and well-tolerated laxative.

ACTIVE CONSTITUENTS
Agarol Compound is composed of thoroughly emulsified mineral oil in an aqueous agar-agar. Each tablespoonful contains three grains of phenolphthalein.
PACKING: *6 & 14 oz. bottles. For dispensing purposes Agarol is also available in an 80 fl. oz. size at 13/6d. not subject to Purchase Tax on prescription.*

AGAROL

No Warner preparation has ever been advertised to the public.
William R. WARNER & Co. Ltd.,
Power Road, London, W.4.